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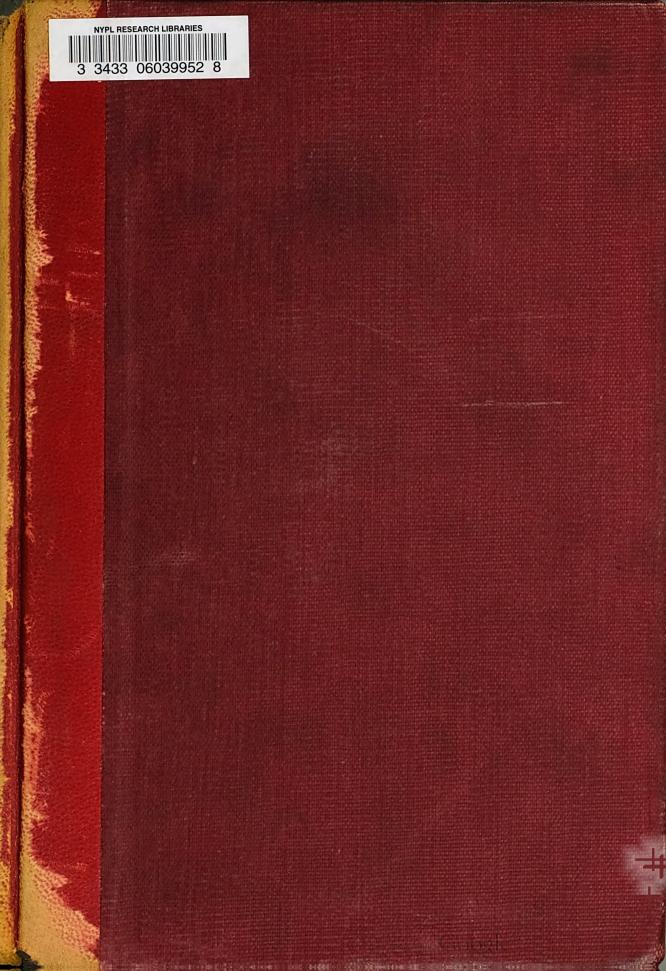
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PHOTOGRAPHIC JOURNAL

01

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THOMAS COKE WATKINS, EDITOR

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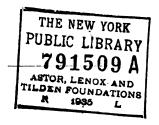
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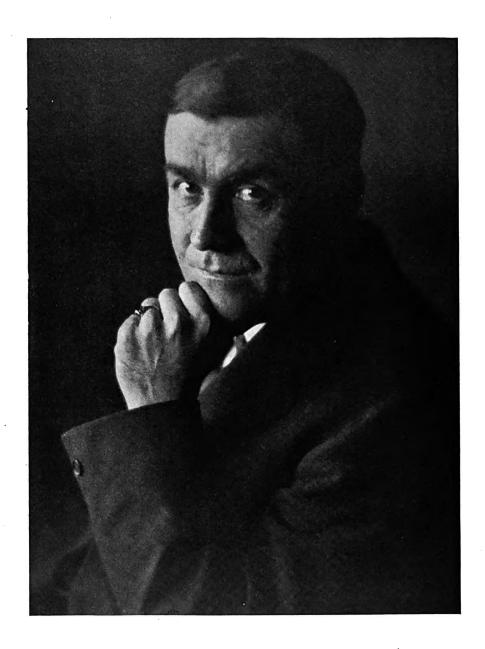
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REMARKABLE ADVANCE IN PHOTOGRAPHY IN FIFTY YEARS

By S. L. STEIN

HAT about the advances in photography during the past half century? Well, a question like that is a pretty large order, and even a photographer who has been right in the midst of things for years is likely to be floored by it.

Everybody knows and talks about the development of the automobile and the aëroplane, but it is really doubtful whether the advances in these directions are any more remarkable, when you are familiar with the facts, than the progress in photography during the past fifty years. Of course, in a certain measure, this progress is perceptible to the general public, because the movies have become so intimate and widely popular a feature of our national life; but comparatively few persons are fully aware of the less obvious but scarcely less revolutionary changes and development in the so-called professional photographic field.

Revolutionary, and yet evolutionary,

too. We owe a great deal to the early workers, and none are so quick to recognize that debt as the best photographers of the present day. There was Daguerre. for instance. When graduating classes in the colleges sixty years or so ago had their individual pictures made, as is the general practice today, the pictures were daguerreotypes, and remarkably fine portraits most of them were. The daguerreotype came in as a substitute for the old-time but more expensive handpainted miniature, and one reason for its excellence was that the daguerreotypist had to compete with real artists in achieving his results. This he did surprisingly well, in spite of the fact that the process was necessarily slow, so much so that a head-rest had to be used and the exposure lengthened into minutes. Photographers of the present day have learned a whole lot from the study of those old daguerreotype miniatures, for we are once more in a period when pho-

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tography is not a mere cheap substitute for art but a recognized form of art, by which the very finest results are sought and achieved, results not only equal to what might be achieved with the brush but which many times could not be achieved at all by any other process whatever.

The fact is that, after a long and in some respects painful series of changes, photography has emerged triumphant from the cheap-substitute period of the plush album and crayon portrait—the kind you don't see any more on an easel in a hermetically sealed parlor, or looking down in all its gorgeous gilt from over the piano. To the real photographer of today the memory of that period is a nightmare, and yet, in spite of all its cheapness and poor taste, we owe it a tremendous debt. It performed for photography of the future a service comparable to that of the cheap car to the automobile industry of the time in which we now live. It made photography popular, and by so doing encouraged the manufacture of photographic materials and apparatus on a large scale. In other words, it provided the capital for experiment and investigation on a generous scale and built up a market for new and improved lenses and devices of every sort.

Then came the amateur movement, and to that, too, for the same reason, the professional photographer owes more than he is always willing to admit, for the profits from it made possible still further advances, besides aiding greatly in enlarging and extending the machinery of sales distribution for photographic

products.

When the daguerreotype was put out of business by the vastly cheaper processes which immediately succeeded it. just as it in turn had knocked the miniature painter into a cocked hat, there were naturally a great many pessimists who declared that real art in portraiture was on the toboggan for good and all, that the national taste was being permanently vitiated, and so on. Time. however, has not justified any such sentiments as these. At first, of course, the field became flooded with a lot of photographers who knew no more about art than a sign painter, some of them less,

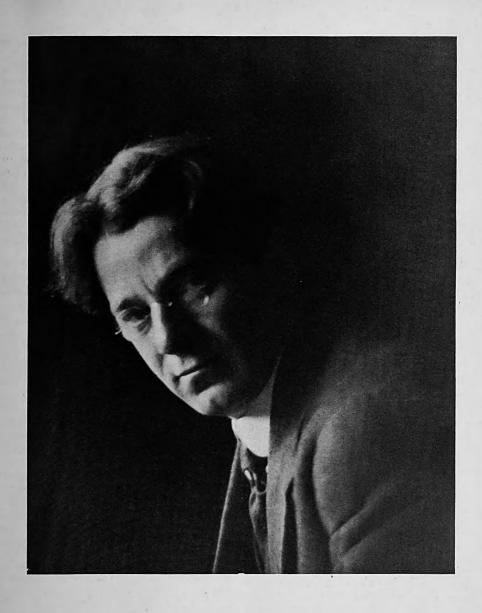
yet this condition slowly but inevitably changed. The country as a whole had got upon a photographic basis for its portraits, and yet there were an increasing number of persons who wanted something better than the prevailing type of photograph of the day. There are always people who want something better, and in a country like ours, where incomes have increased so and the oppotunities for the development of personal taste have been so widespread, they generally get it. The atrocious crayon portraits already referred to represented a sort of a feeble-minded effort to meet the new demand, but they did not meet it for long.

This was where the artist-photographer of the present day began to appear. He was a man of greater intelligence and better training than the photographers around him, though in many cases he was a graduate from photography of the cheaper type. He threw overboard completely the idea of turning out photographs so inexpensive that the commonest laborer could afford them, and set himself to meet the requirements of a discriminating public which wanted portraits that would continue to be prized with the passing of the years. That is, he left off sign-painting and became an artist.

It is an interesting circumstance in this connection that, when the leading photographers get together at conventions, the current of comment and criticism in regard to the exhibition pictures is constantly punctured with reference to the work of the noted brush artists in the world.

When the photographer had reached this stage the manufacturer was waiting for him. The results of the most painstaking investigation of technical processes were laid before him. There were new and better plates, new and better lenses for every type of work, better papers and methods of manipulation, improved cameras, thoroughly tested systems of artificial lighting, and besides all this a constant flow of photographic literature of an informing and stimulating nature.

It may seem to some that in saying this I am simply indulging in a little



PORTRAIT OF MR. ALVIN LANGDON COBURN (c) BY TRAVERS SWEATMAN WINNIPEG, CANADA



pardonable pride in my own profession, and yet it is a fact that this attitude is the common one today among good photographers the country over. Not long ago a landscape artist of high repute, not himself a photographer, came out with the statement that with the tools he now has available, an artist today should be able to accomplish nearly all that was formerly accomplished with the brush. In other words, a good photographer at the present time is merely an artist who uses a camera instead of a brush, and the time has come when his results are measured not by his medium, but by his artistic skill.

A great deal might be said about the mechanical and technical developments in photography during the past half century, but the list is so long that it would make dull reading for those who are not acquainted with the subject.

There never was a time when photographers had such good tools to work with, and because this is so their abilities have freer play and there is far more opportunity for personality to show itself in the quality of work produced. The whole thing has got onto a systematic basis—more so than ever was true of the painter—and the photographer accordingly has time to study his subject and draw him out, thus achieving a presentment of character and reality and truth. What we have arrived at in this respect is really amusing when we recall the torture chambers of our childhood, where we were enjoined to "watch for the birdie."

[S. L. Stein, whose artistic photographic work has received high recognition, prepared for the *Evening Wisconsin* this interesting review of the progress of photography.—Ed. P. J. A.]

CONCERNING TONE VALUES

By "PROFESSIONAL"

ONE, in an art sense, should not be construed by the professional photographer to mean color. We have for years past used the word, in defining the color of our prints, such as the blue, purple, olive, black, or sepia tone, etc., but this relates to the results produced by our chemicals. Artists frequently use the word in the same sense as we do, enlarging its scope by various other expressions, such as "cool," "warm," or "rich" tones; but when they so express themselves it is evident to those with whom they converse that they refer either to the color tone which prevails throughout or to the strength or depth of this color.

Now, while admitting that the word "tone" is thus used by artists, as exemplifying a principle in pictorial art, it is understood by them to mean at least two other things.

1. Atmosphere Tone

The obtaining of an effect over the whole picture, similar to what would be

produced if we were to interpose a transparent and meshless veil of harmonious tint before the picture, through which the light would pass as through an atmosphere. It may very easily be imagined that this would result in bringing all parts of the picture into harmony, by placing in their proper planes of attractiveness, etc., all the colors, lights and shades, perspective, and the various values. This we will designate as "atmosphere tone."

2. Light Tone

Tone is also understood as meaning the gradations of the light falling upon the objects painted or photographed in various degrees of intensity; the gradations of chiaroscura, or light and shade. This we will call "light tone."

We will comment but little upon "color tone," most familiar to photographers by long usage, except to state the well-known fact that many false tones are apparent at times in our printed-out papers, where the faces,

hands, and other masses of white are not of the same color or tone as the shadows, etc. Since our various paper demonstrators have for years, at our conventions and in our studios, touched upon a solution of this matter, it is unnecessary for the writer to go further into a subject so well understood by us all.

The "tone" produced, illustrated by the interposition of a veil, as descriptive of a certain effect which we wished to describe, and the "light and shade tone" afterward mentioned, will form the substance of our further remarks on the subject of tone, as more nearly coming within the exact meaning of the term in a pictorial sense. We shall refer to them irrespective of any further classification or intent of separation.

"Light tones" may be further defined as meaning the harmonious blending, by gradation, of all the lights into the darks, in their proper degree or shade. In other words, the gradation of the multitude of little lights and darks to their adjacent parts; of the larger masses of various degrees of light and dark to each other, and then, in turn, of every part to the whole. The result as a whole may be light, medium, or low in key, and yet be in tone.

Tonality

Unity of tone by gradation may be present in certain parts of the picture and absent elsewhere. When it envelops the whole picture like an atmosphere (which under certain conditions is easily and charmingly produced in a land-scape), then such a picture is complete in tone in all its parts: its "tonality is good."

Improved tonality in portraiture may be obtained by placing the subject away from strong light, as when working for color values. This causes the light and shade that fall upon the sitter, and other parts of the composition, to easily fall into any degree of gradation that the pictorialist may desire: *i. e.*, slight changes will often be found necessary to keep these gradations in harmony. For instance, he hardly expects that the chair as first placed is exactly where he

will wish it in the final composition. He must judge the effect of color values as well as the ultimate pitch of the key in tone.

Pictorial workers often describe this placing of the subjects in a suitable location in the room, as "bringing them in tone," "arranging the composition in tone," "placing them where they will be in tone," etc.

The distinctions between various principles are sometimes very slight, especially so in monochrome work, and all effort toward the attainment of one materially aids the successful accomplishment of others.

Tone Improperly Rendered

Pictures may be out of tone in some of their parts, although in good order elsewhere, simply because the parts do not pull together or harmonize with the rest. It may be that certain places are too white, such as the face, hands, collar, cuffs, etc. These, on account of their startling appearance (due to "forcing" forward by too strong lighting or other causes), appear to "jump at you." Remedy: In lighting the composition throw more shade on these places.

It may be that other parts, not quite so prominent, perhaps, but in greater number, are at fault. These impress you as disturbing the harmony of the composition by their distracting assertiveness. Remedy: Throw more shade on these parts. If in background, place it farther away from the direct light. If in accessories, remove them from the picture if possible.

In the earlier papers of this series we have frequently referred to the importance of making various elements that enter into the picture take their proper positions in attractiveness. The less important must not interfere with the concentration of interest upon the most important, which in most pictures is the face. We also have mentioned that if any be unduly prominent they should be subordinated, their attractiveness lessened, either by lighting (if discovered in season), in development, or by the knife afterward. It is here that the ambitious student, in his attempt to

improve a faulty piece, by partial or total elimination, should be on his guard. He must see to it that the work be not overdone, and that by toning down, because too bright or objectionable, it is not made too dark.

Pictures in Low Tones

In making pictures in low tone, great care is necessary that the tone be rich and full, in default of which only muddy, black, and heavy prints will be the result. Accented lights will help to overcome these muddy tones, if used with care, so that texture and tonality are preserved.

Bear in mind that even the shadows, to say nothing of other dark parts of a low-tone picture, produce muddy effects unless gradation is present, excepting in a few of the very deepest shadows. This was the trouble with our earlier efforts in low-tone work, and still continues in the majority of the black backgrounds, in pictures made today, constituting a mass of gloom-unfeeling, unintelligent, unsightly, and overpowering in effect. Put some life into the background, if only by flowing the back of the negative with ground-glass substitute and, with a tuft of cotton and yellow ochre, very slightly working-in larger or smaller masses so that, even while still dark, they will lessen the gloom by a semblance at least of gradation. (More of this, however, on a future occasion.)

Rich Low-tone Pictures

A rich effect in low-tone work is obtained by avoiding monotony. This is to be guarded against in work photographed in any key. This is accomplished by seeing to it that some parts of the ground or figure are more highly lighted than others. To avoid "spottiness" these higher lights should be massed, not of necessity over large areas, but enough to balance the picture without attracting too much attention. A little goes a long way. Richness is increased by a repetition of this scheme in some other part of the picture. It makes the whole piece a little more lively, aiding contrast, while enriching the shadows in which, as above

said, some gradation is necessary to prevent muddiness.

The character of these masses, if obtained with the lighting, is largely governed by their own shape or form, which in itself adds interest. If obtained by working on the negative, then do not overlook the importance of making these worked-in masses of lighter key, interesting in their shape, in some such way as to suggest a form that is *not* symmetrical, for symmetry is decidedly objectionable in art. Also have the character of the masses, if more than one be employed, dissimilar. This subject will also be amplified in a later issue.

Pictures in a Light Key

Avoid a continual and unceasing gradation in "light" (and shade) tone, throughout the whole picture, when in a high key, for in this case, as with low tones, the results will be tame and monotonous.

In these "keyed-up" pictures have the light and shade a little more marked and snappy, at the same time being careful that it is not out of harmony in tonality. This art principle serves well as a brake to check a too liberal application of this suggestion. As in the case with low-tone work, it also produces variety and creates interest. Locate these enlivening tones of light and dark in various parts of the picture to produce richness.

The writer saw a reproduction of a very delicate painting in decidedly high key, a group of fair children against a light background. The spots of dark were introduced at different parts of the picture by two dark-haired children, and a fairly strong shadow at another place. Result was beautiful. These dark masses were responsible for the success of the picture; on covering them the piece was insipid. When, however, a mass of dark cannot well be inserted in pictures of lighter key, it is sometimes advisable to introduce gradation to prevent flatness.

In pictures in the lighter keys the range of light values very often does not give a contrast of more than 15 to 35 per cent. out of a possible 100. The result, therefore, is more liable to be flat than when the range of contrast is greater, although not heavy, dark, and forbid-

ding, as in pictures of the opposite key. For this reason it seems that a continual gradation throughout all parts of these pictures with little contrast should be

striven against.

Breadth, in connection with tonality, the elimination of non-essentials, etc., is always desirable. Directions in arrangement and lighting (the beauty of simplicity), added to the elimination of unnecessary detail, flat shadows, and broad effects of light and shade, will do much toward making a success out of what otherwise would be a flat failure. This, in photographic art, appears to be the highest attainment in the production of high-keyed pictures.

The reader should not think that because I have advocated striving to produce the luminosity of color values, and gradation of tone values, that I have here contradicted myself in advocating a practical disregard of some of these principles in pictures of the lighter key with slight contrasts. Even if my recommendation be accepted, it does not follow that values of all kinds are to be disre-

garded. On the contrary, some cases may call for even a greate amount of care that these principles be not dis-

regarded.

Art does not require that every principle known to it should be employed to its extreme extent in all instances. It is all a matter of choosing the "handling" or treatment best suited for certain effects, and the producer of pictures by the lens should be able and resourceful in quickly determining how best to handle these various conditions as they arise.

Rules there are none in art, in the strict sense of the word. Certain rules have been proved to be good under certain conditions; yet even these have been broken and masterpieces have resulted from their breaking. Discrimination and judgment are left for the artist to employ. The study of correct "handling" is what he requires. He sometimes succeeds under certain conditions by violating principles which under other conditions it would be imperatively necessary for him to follow.

(To be continued.)

GETTING MORE BUSINESS

VI. CAPITALIZING COMMERCIAL OPPORTUNITIES

By J. CLYDE WILSON

FRIEND of mine who has an office in one of the large sky-scrapers was talking advertising with me the other day and significantly remarked: "Do you know, I haven't been solicited by a commercial photographer but once in the last nine months, and then it was only by letter-a mere announcement that he was engaged in that work and solicited my business. He did not attempt to sell me; he did not try to show why I should patronize him rather than someone else; and he did not endeavor to show me where I could use photographs to advantage. And yet, here I am in the center of a big city, selling a mechanical specialty to manufacturers, and in a position to use pictures myself and sell others on the idea if I could only be sold myself. What is the matter with you photographers?"

I tried to apologize that photographers were pretty busy as a class and didn't have much time to run around in that

way.

"Nonsense," he said; "too busy to solicit business! Who ever heard of such a thing? If business is as good as that it certainly ought to be worth while to send out a few salesmen and quadruple what they have. Just think of it! Not once have I been solicited by a photographer's salesman in nine months! I suppose, maybe, that photographers may

have come in here at some time or other, noticed we had a nice office here, but were manufacturing nothing and so had nothing to photograph. Probably he said: 'Can I interest you in photographs?' To which our answer would naturally be, 'No!' We always say 'No!' when a salesman opens up that way, because we are from Missouri. We never show our hand until it is to our interest to do so; but as a matter of fact I think we could give a photographer considerable business, with profit both to him and ourselves, if he would only show us where we could use photographs to advantage. He ought to know that. He is in touch with other users and knows of many ways in which photographs would help us sell goods—and that's what we want. We want to be shown. Salesmanship is education. Our needs normally are very few, but see how they have grown under the pressure of business necessity. How many needs have been created in recent years by salesmanship alone. We got along for years in the old one-hoss shay—yes, for centuries —and along comes the automobile and good salesmanship and advertising and now we ride in automobiles. Today the horse still pulls the plow, but tomorrow the tractor will displace it. Sales activity is in large measure responsible for this.

"Here we are only one firm among some five hundred who have offices in this building, and perhaps half of these could use photographs in a business way if persistently followed-up by advertising and good salesmanship. What that photographer should have done in this particular case was to follow-up his letter by a call. He should have gone to the pains to find out who was in charge of our office and sought him out. Then he should have introduced himself pleasantly, shown a few of his pictures, not taking too long about it, and leaving with a hearty handshake and a promise to drop in again soon. That would have been an introduction, and if he was any kind of a fellow the ice would be broken. A week or two later he should drop in again, on some pretext or other, as though it were a chance affair. He might, for instance, bring up a photograph he had taken of some product similar to ours

that would offer a suggestion to us. I can imagine some such conversation as this:

"Well, good morning Mr. —— (shaking hands). I was just up on the twelfth floor, and thought I'd run in and see you. Begins to look like spring, doesn't it? I have something here I want to show you, Mr. ——. I'm rather proud of it (opening portfolio). I took this the other day (handing print to Mr. ——) for Elliott-Fraser Co., to illustrate the use of their product on an automobile. A dealer can see at once in this picture what a salesman is driving at—it keeps the dealer's attention riveted to the subject while the selling talk progresses. We are making pictures of this kind for (here name a list of well-known customers)."

"Having got this far and before the prospect has had a chance to get bored, he wraps up his parcel and leaves pleasantly, not even asking for business. After two or three pleasant calls like that the salesman finds he is talking with friends and then he may gradualy press upon the prospect more forcefully where pictures would be of value to him. By observation he will have learned more of the prospect's product, concerning which he should ask questions and display more than ordinary interest."

All this sounds more complicated in the telling than it is in fact, but I am inclined to think there is something to what my friend has said. In the larger cities the commercial business is handled by specialists, but in every town there is an immense amount of commercial work to be had if it is properly sought. The average business house does not know how to use photographs. Unless his competitors use photographs in selling he is liable to pass them up, too. Not infrequently, however, merchandise can be better shown by pictures than any other way. In the first place, the product can literally be shown in the most favorable light—ofttimes in use. Secondly, photographs are easier to move about than a lot of sample trunks, and it is a whole lot cheaper; thirdly, they bring the samples to the buyer and not the buyer to the sample at the hotel, which is much easier and far less expensive. All of which are good arguments for the use of photographs as a selling medium.

It is a common mistake, in the writer's opinion, for photographers to confine their study of their business to its technical phases—to overlook the importance of salesmanship as it bears upon success. To be able to make good photographs is a sine qua non, but it is not enough. Fear that he cannot "make good" prevents many a photographer soliciting business he could have. He is afraid he hasn't the right apparatus, the right plate, or the right lens. A long-focus camera, an anastigmat lens, a wideangle, and a flash-lamp is all the apparatus needed for nine jobs out of ten. In a few of the larger cities there are specialists in photographing stoves, glassware, and architectural subjects, but they are few and they have their clientèle. Loaded with non-halation, orthochromatic, or slow commercial plates, a photographer with any experience at all has nothing to fear and everything to gain. A good note-book, kept in the camera case, in which to record exposure data, is something that if used with discretion will soon prove a mine of information that soon removes one's operations from the range of doubt to that of knowledge. It helps wonderfully in giving a clew to exposure under trying conditions and prevents making the same error twice. Every photographer "falls down," at times, and learns thereby. Never hesitate because you might not succeed—try anyway. Failure, after all, is human, and is a crime a long way short of a penitentiary offense. Common sense in photography, as with everything else. is still the most useful tool a photographer possesses.

The greatest difficulty in the commercial business is getting new customers started. Once one gets a large manufacturer to see the advantage of selling by photographs he is liable to have a permanent customer so long as he watches his P's and Q's and keeps the customer The writer was pleased and satisfied. an almost daily caller at such a plant for years and he received his monthly check as regularly as though on salary. His presence also gave many department heads ideas for the use of photographs which he was called upon to execute. One day the concern of which we have

spoken, which manufactured toilet soaps and specialties, decided to work up a window display to be placed in drugstores, one feature of which was to be a number of actual photographs of the soap in the course of manufacture at the factory. The whole process of soap manufacturing was accordingly photographed in the plant in ten views. These were delivered, and then, as a courtesy, the writer printed a duplicate set, hinged, with linen backs, and tied them into a book-form with a silken cord, a sheet of heavy black catalogue paper cover-stock being used as a cover. This was appropriately lettered in gilt and presented to the advertising manager. He was naturally delighted, showed the book all around, and before long an order came through for several dozen of these books to be sent to the branch managers and their salesmen. As each book contained ten prints it was no small order, and ran into considerable money.

There are many such opportunities as this if a photographer is persistent and goes after business in a systematic wav. If letters are used as a medium of advertising, a definite letterhead should be used and the letters should be sent at frequent intervals. The first one or two mailings may not result in a single order; but, as time goes on and the messages persist in turning up periodically, results will begin to show. A single advertisement, unless directed to those who know you (such as old customers who are laggard), is not liable to be highly productive of returns; but persistent advertising, if directed to the right prospects, must eventually produce business.

When a salesman calls for the first time in a territory the house has not previously solicited, heavy returns are not expected. We say he is doing "missionary work"—he is familiarizing the new prospects with the house. That is what the first letter does, and even the second and third. But when two or three letters are followed by a personal call—when the prospect has a chance to gauge your chance of being dependable, through seeing you, through some tangible contact with you or your proposition, he is readier to risk his business with you.

Personality still plays a great part in business. To get the business, get out and meet the man with business to give —buck up and see everyone you can. Join the local Board of Commerce or the Business Men's Club. The more men who can slap you on the back with a friendly, "Hello, John!" other things being equal, the more business you are likely to get.

A man said to me the other day: "I have found the line dividing those who have succeeded, or will succeed, from those who never will: On the one side are those who mean well, who want to get ahead and who wonder if they can; on the other side are those who mean to get ahead, who try and keep trying until they can be denied no longer, and finally sit astride the pinnacle they sought because they wouldn't listen to doubt. When I want business I walk right in and ask for it. Who has a better right? Sometimes I come out faster than I went in. Instead of blaming myself for that I gather myself together and tackle the next fellow. You can call it plain everyday 'brass' if you want to-I call it confidence and I find that it pays. As a commercial photographer I find I get nowhere waiting for business to turn up. People are not hunting up commercial photographers to spend their money with. But when I find a man who ought to spend his money with me because I can save money for him and help him to earn more, I sail right in and try to sell him my idea. If I succeed in one case out of six—and I usually do—I have gained more business than the fellow who waited for something to turn upeven if he is a better photographer than I am. When a photographer says he has all of the business he can take care of and no longer solicits, I feel that he is on the road to ruin. For it isn't long before some energetic fellow discovers he is not soliciting business and takes advantage of the fact to build up prestige at his expense. One morning the man who has been 'living on his reputation' wakes up to find himself outrivaled by someone with a bigger reputation."

Commercial opportunities are to be found everywhere-in the city and out of it. Those who make commercial photography their entire business confine their activities to the large cities. But every community has industries of its own which can be exploited by photography. The local merchants can be sold. Just to cite an instance, what is to prevent the photographer working up a very good little business by making slides of the local town beauty posed in the latest spring modes for display in the local movie theater about Easter time, to feature the new stock of the leading store?-or photographing the two carloads of farm implements that arrive for the local implement dealer?—or soliciting the local foundry or the canning mill? Why shouldn't he be able to interest the creamery in a series of pictures of its plant, inside and out, for advertising? These instances are cited merely by way of suggestion, but they by no means compass the opportunities, which must be looked for—dug up. But, why not? "Digging for Business," in the current slang of the hour, is "a Yankee's middle name!''

RECIPE FOR SUCCESS

O EACH pound of your invested capital, add several ounces of good bookkeeping, a generous quantity of service, a goodly portion of advertising, and a great big dash of enthusiasm. Then stir. Don't leave any of these ingredients out and be sure not to forget the enthusiasm. Enthusiasm is the high flavor that makes business tasty. It is the music and laughter at the banquet. Without it nothing in the world would seem worth while.

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"PALS"

(c) BY TRAVERS SWEATMAN, WINNIPEG, CANADA

PHOTOGRAPHING INTERIORS

By CHARLES EDWIN ARNOLD

T is acknowledged that interiors the interiors of rooms, offices and the like—are extremely difficult subjects to handle successfully, and this is perhaps the reason why the demand for work of this kind is not greater. The average commercial photographer does not particularly encourage this line of business and he too frequently permits himself to offer his customer work that can hardly be satisfactory. Interiors, rightly handled, make very interesting pictures; and, properly made, they are greatly appreciated by the customers for whom they are produced. I have frequently been engaged to photograph one or two of the rooms in a home or building, and then, as the prints were delivered, received an order to photograph all or a good part of the other rooms on condition that the results be of equally good character. Not infrequently I have been given orders for one or more albums made up of views of every room in a house, these resulting from the satisfactory outcome of an order for a picture of

a single room. In many other instances I have received good orders from people who have been shown examples of my work made in the home or office of some acquaintance, all this showing that quite a nice business can be done in this line if the photographer will only give it the care and attention necessary to turn out pictures that lack the too-common grotesque character and soot-and-whitewash quality of much that passes for interior photography.

In my interior work I depend practically entirely upon daylight as an illuminant, using flashlight only when life must be depicted, as is often the case with pictures intended for illustrating or advertising purposes. Flashlight has its advantages; but it is, to my mind, unsuited to the portrayal of an interior, for the simple reason that the lighting effect secured is not that natural to the room and it does not give the windows and the open doors into other rooms their natural and logical appearances. True, using a flash does much to simplify mat-

(13)

ters; but, while the result may not seem particularly unsatisfactory to the photographer who has esen the room only once, the customer, more familiar therewith, perhaps hardly recognizes the scene when the light is from a point practically opposite that from which it normally comes, and the parts of the room generally in shadow are shown as the best-lighted and most noticeable. We can by only a moment's thought recall how strange some room, with which we are quite familiar, looks when seen for the first time illuminated by perhaps a large chandelier near the center instead of the natural light coming in through the windows.

Using daylight and a long exposure, one is in a position to do almost anything he may wish in the matter of evening up the exposure, particularly if there are a number of doors and windows through which the light enters. A window back or well to one side of the camera may be allowed to remain unobscured during the entire exposure. One coming within the view may be best covered during onehalf the exposure, perhaps for a greater or lesser period. It is obvious that if it be covered for too great a part of the total exposure, a false effect, somewhat akin that resulting from a flash from behind the camera, would result. If the principal light of a room enter through a large window in front of the camera, that light should be allowed to dominate the lesser lights that other windows afford. The obscuring of a window in front of the camera can be carried to such a point that the view outside shows plainly in the picture; and, when this can be done without falsifying the lighting, it adds much to the interest of the picture, adds much to its charm. Frequently the sash of such windows become obscured in halation (or would so become were not control exercised in developing) when the necessary amount of light is allowed to enter through them. The proper procedure is to so regulate the time they are allowed to remain uncovered that the proper lighting effect is secured, and then, if over-exposure of the window itself results, use such control as may be possible in development. The above indicates clearly two forms of control—that of covering or darkening windows or doors for a portion of the exposure time, and that of holding back development of brilliantly lighted areas in making the negative. The first I generally achieve by using some large sheets of stiff binder's board that have been either painted black or covered on one side with black cloth. Each sheet is provided with a slot, about one-fourth inch wide, extending from the center to within a few inches of one side. overlapping the slotted sides of two of these sheets and passing a winged nutbolt through the slot, one is provided with an adjustable "blind" that can be arranged to fit any window or door, much as do the adjustable window screens in the market. Of course, two or more sets of these slotted screens are required to fill a window, depending upon its height. A door is made blind in the same way. By slightly springing the cardboards before finally tightening up the screw in the slot, enough pressure can be secured against the sides of the window or door casing to hold them in place. As light will enter through the slots where they come opposite each other, it is best to glue a strip of cloth along each side of these openings to cover them without impeding the action of the bolt that holds each pair of "blinds" in the proper position to fill the space being darkened. Where the window is easily accessible from the outside, large sheets made out of a good close-texture, but thin, black cloth can easily be pinned around the outer casing in such a way that a slight, quick pull at one corner will bring them down when the light is to be admitted.

Control in development is, I find, mainly a matter of denying the over-exposed portions sufficient reducer to allow of their becoming blocked-up before the detail in the poorly lighted portions are brought out. It is obvious that tray development, with the constant bringing (by the rocking of the tray) of a new portion of the developer into action over every part of the plate, defeats this end. The portrait films, I find, have wonderful semi-orthochromatic qualities, combined with the power of overcoming halation of windows and the like as perfectly as do non-halation plates.

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iu, erto erThe formula I employ most generally is used extensively by French and Swiss workers along similar lines. This formula for a non-alkaline developer originated in the fertile brain of a Lumière in coöperation with Dr. Schmidth, whose famous laboratories of research and scientific photography at Kusnacht, near Zurich, Switzerland, I had the pleasure of visiting some fifteen years ago, through the courtesy of the Swiss aëronaut and originator of the balloon camera, Mon. Spelterini.

As I have modified it, and using the metric system for convenience in compounding, the formula calls for 7 gms. of pyro dissolved in about 250 c.c. of hot water, 60 gms. of Lumière's formosulphite dissolved in another like amount of hot water, with 5 c.c. of a 10 per cent. solution of potassium bromide added for clear edges. These two solutions I pour into my 8 x 10 plate tank, holding two and one-fourth gallons, and fill up with water, taking care to see that the temperature of the developer stands at 65° F. Develop from forty-five minutes to one hour, according to density required for papers used. This method of developing gives one great latitude in overcoming over-exposures in the high-lights, helps to maintain the effect of uniform lighting, and gives a great working scope in assimilation of various color schemes of furniture and interior decorations.

Formosulphite, used to replace both preservative and alkali in this developer has the advantage of perfect keeping quality, both in powder form and in solution, while softening of the film and other troubles attending the use of caustic alkalies are avoided. A little oxalic acid can be added to the pyro solution if one desires to use this developer in the form of a stock solution. For the convenience of those so desiring and those who do not use the metric system, the formula is given in the more common form below:

- AC 6	×			A			
Water, hot							16 ounces
Pyro							1 ounce
Oxalic acid							15 grains
				В			
Water .							16 ounces
Formosulphi	te	25.					4 ounces
2-	770			C			
Potassium b	ror	nid	e so	luti	on		10 per cent

For about one hour tank development at 65°, take four ounces of A, eight ounces of B, and two drams of C, adding water to make up to two and one-fourth gallons or nine quarts, the contents of an 8 x 10 Eastman plate developing tank. For tray development take two ounces of A, two ounces of B, eight ounces of water, and a few drops of bromide solution. The developing factor is six.

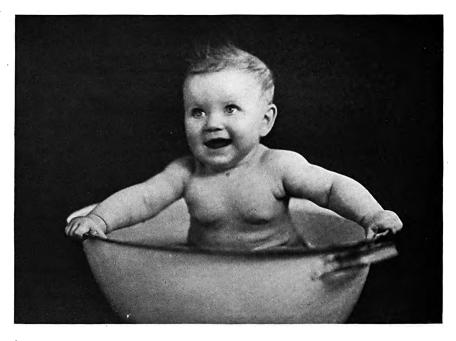
The matter of a uniform lighting that still maintains the natural light effects of the room having consideration, the next point is that of good color values. I always use an orthochromatic plate and frequently fortify them by using a backing preparation when the non-halation kind are not employed. Seed's Panchromatic, Seed's Ortho and Seed's Non-Halation Ortho plates are used exclusively. In addition, I sometimes use a color filter, either a light or medium one as the case seems to demand. The ortho emulsion will take care of ordinary color contrasts, particularly where warm tones prevail, but occasionally one will meet with a case in which blues form an important part of the color scheme, and to prevent these last from being lost, a ray screen is required. With the lighting properly controlled, with full exposure assured, and with tone values preserved, good work only requires a little judgment in the matter of selecting the right viewpoint and avoiding the inclusion of unnecessary furniture or the like so close to the camera that it appears distorted or, what is equally objectionable, cut off abruptly so that no support is shown.

Correct exposure is not near so difficult as one might imagine, it being mainly a matter of giving enough time. If one will go over his past experience in this line and try to recall an instance in which too much exposure was given, he will realize that there is little danger in that respect. About all that is necessary is to be sure and give plenty of time; of course, using judgment in the matter. I do not wish to imply that any exposure will be right, just so it is not too short, but I would call attention to the fact that the latitude is much greater in this class of work than in the usual run of commercial photography.

Point of view is all important. A well-

handled interior gives the beholder a feeling akin to that of standing within the room pictured; a poorly handled one appears as would the scene were it examined from without through an opening in the wall. In one case the beholder is satsified with what is included; in the other, the feeling is one of being denied, of being offended by portions of heavy articles of furniture that his eyes instinctively try to furnish with a support. So important is this matter that I would hesitate to photograph any interior without being supplied with a battery of lenses that would permit me to select the point of view that I desired and then use a lens of such focal length as would give me what I wanted from that particular point.

Of course, it is not always possible to get exactly where one would wish in the matter of either distance or the direction in which the camera is pointed; but it must be remembered that one can at least place the camera on the exact spot from which the room is most frequently viewed by those visiting it, is at least always available, and of course a selection of lenses will permit the worker to include all that the beholder could see from that point without turning his head, if that is desirable. On the other hand, truth to subject makes it advisable to use as long a focal length as is allowable consistent with a satisfactory portrayal of the main or characteristic features of the room. I might add that, while the position from which the room is generally entered may give the most familiar aspect, one permitting a visto into another room, onto a balcony, or through a window, sometimes is more advisable. True, such a viewpoint may not be the one the visitor encounters; but it may be the one with which he is more impressed than with the other, it may perhaps tell a more complete story concerning the room being pictured.



(e) BY TRAVERS SWEATMAN

WINNIPEG, CANADA

on the exact spot most frequently g it, is at least f course a select the worker to older could see

urning his head, the other hand it advisable to as is allowable tory portrayal tic features of hat, while the m is generally ost familiar isto into an-, or through re advisable. not be the but it may s more imit may perry concern-

EXPRESSION IN PORTRAITURE

THE great fault of photographic portraiture is the want of meaning and expression in the faces and poses of the subjects; the want of real character, which reduces what ought to be a "speaking likeness," a representation giving the individuality of the person, into the mere semblance of an expressionless wax-work. The features are there, the anatomical outlines are perfectly clear, but the life and soul are gone. But to put life and soul into a portrait whether photographic or otherwise the artist must be a student of human nature and have the power of drawing out and seizing upon the personality of each client which is usually veiled by the tone of polite and calm

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some rare coin or book. Set a chess-

player before a board with a difficult

problem to make out and you will get a

good expression of earnest thought.

Watch a musician when he is listening

to the performance of a fine orchestral

piece, and you will see a picture of

rapt attention. Place a painter before another man's picture if you want a critical expression and gaze unobserved on a mother looking at her sleeping infant if you would have one of yearning tenderness. All such are familiar, yet useful, figure studies, and without acquiring a habit of looking for the best and most characteristic expressions of various persons no success can be expected in the art of portraiture as it should be, and we must needs content ourselves with the simpering, pleasant, and "trying to look pleasant" faces, and eminently artificial poses, which now fill our shopwindows and our albums.



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indifference which in society it is thought a "good form" to adopt. One must blow away the ashes and expose the hidden fires. Talk to a man of his hobby and animation will kindle in his face. Catch the glow of delight on the face of a collector as he eagerly handles

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F THESE HOURS BE dark, as, indeed, in many ways they are, at least do not let us sit deedless,

like fools and fine gentlemen, thinking the common toil not good enough for us and beaten by the muddle; but rather let us work like good fellows trying by some dim candle-light to set our workshop ready against tomorrow's daylight—that to-morrow when the civilized world, no longer greedy, strifeful and destructive, shall have a new art, a glorious art, made by the people, and for the people, as a happiness to the maker and the user.



THE NEW DAWN

THE past year has been fruitful in real progress and ripe with promises of better days to come. In almost every department the photographic record of 1918 shows distinct advancement and in many respects an improved condition of affairs. The professional photographer especially has reasons for solid encouragement. Business has been good and is steadily improving; better work is becoming more common, thus forcing the general standard toward a higher plane; portraiture is being quietly transformed to an art, and higher prices are more readily obtainable than heretofore.

Thus the year 1919 approaches; it comes to us under the enforced realization that a new dawn means much to the individual as well as to National and World affairs.

The New Year should mean much to each of us because it is inseparably woven into our lives, and with our appreciation of what it means to us and we to it, we will proceed with our work and with our success, happily endowed for the race to the good and the winning of the pennant, and that pennant may mean added business, better recognition as a worker in photography, new discoveries of processes pertaining to your work or equipment, and all proving the personal satisfaction of work honestly done. When we say honestly we mean to convey that only as we apprehend the ap-

proach of the new dawn can we succeed. The great vital question is: How to grasp this opportunity which seems to be within reach. Look over your business; simplify it: weed out the rubbish in ideas and equipment; put it into such a shape that it will everywhere respond to the new enterprise you are to infuse into it. Look well over your field of patronage and measure its possibilities. Is there room for a radical departure in styles of work and prices? or will the pushing of good straight photography win most favor? Are there leaks in your present system of business which practically keep your nose on the grindstone all of the time? These questions might be multiplied many times. It is yours to prove good, and only as you discard the old thought and the old ways of doing, will you grasp the new idea that is yours for the giving up a time to concentration.

See your work in a *new* light—yourself working in a *new* way, your studio reflecting the effervescence of your constructive thought, and this means success!

Your New Year—your new thought and your new business—may they all prosper!

ART IN PHOTOGRAPHY

THE steady progress of American photographers in the lines of art in photography is most gratifying. Long renowned for the technical qualities of their work, our photographers are

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now giving more earnest attention to the application of art principles in connection with good technic, with results which speak for themselves in no uncertain tone.

The good work must not, however, stop; to stand still is to lose ground. We must study our own work and the work of others at every opportunity, analyzing and reconstructing it mentally, so that we shall know in what we fail and where others succeed.

Every one who manipulates a camera, and who attempts to render and perpetuate character by its means, should constantly study. Study should be accorded to every subject presented to him, and, after he has treated it, he should again study his result, so as to see whether or not it is up to the standard. Of course, a man should not attempt camera work until he has imbibed the ordinary rules for success; and then these rules should be called up mentally as the work proceeds. Moreover, he should not let any piece of work pass inspection unless it comes up tolerably near to the standard laid down by the rules. Let one grand rule be, Make a good negative to begin with. Do not trust to after-manipulation, or to patching, or to printing-dodges.

It may be asked, "To what do the best photographers owe their successes? If the books and the subjects to which they addict themselves are equally accessible to us, why do we not get equally effective work?" The question to some extent supplies the answer, that we do not give enough thought to effect, and, for the most part, take our pictures when we can get them, and very rarely indeed find out when, and wait till, they are at their best.

A photograph, like any other picture, is a representation of some object or objects. Now, a representation of an object may be artistic or not—may possess qualities born of the marriage of Fact with Idealism, or may not do so; but there is one thing an untouched photograph cannot represent, and that is fact alone. This must be so, for we all know that the image obtained by a

photographic lens is not the same as the image obtained by the human eye. We may go a little further, and say that no object, and certainly no group of objects, is seen in exactly the same manner by any two persons. Where pictorial art comes in is in seeing and representing objects in a truthful and, at the same time, picturesque, or artistic, manner.

In an article in the Quarterly, Mr.

Ernest J. Humphrey aptly says:

"Consider what it is that we do see in Take, for instance, the most beautiful thing in Nature—a beautiful woman. What do we see when we gaze upon her? A face divinely fair. eyes rest in perfect peace and contentment on the face; and though they may wander in admiration over the perfect form and figure, they always return to that which is the true attraction—the This it is which lingers in our memory; this we never forget, even when our eyes wander away from it for a moment. This is the picture; the rest is but accessory. What care we whether the background be well or ill defined? We only see this as a framework to the picture. It is of the picture, but it is not the picture. Does it not follow, then, that the face is what we have to consider when we try to photograph her as she is? The face must be all in all. The rest, being but accessory, must be kept down; so that in the picture, as in life, our attention is nailed on the face, and nothing must detract from this-nothing must withdraw our gaze to that which is of subsidiary importance."

To the artist who works in this spirit, either with the brush or the camera, every picture will present a new and interesting problem, new difficulties will but incite him to further effort; and as his skill increases and his study of Nature leads him to understand and interpret her most subtle moods, he will perceive that the beauty of Nature is inexhaustible, and that all human effort and work must fall infinitely short of that ideal to which he may never attain, and that life itself is all too short to record even a fraction of the beauty and mystery of Nature.

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TRADE AND THE FUTURE

OW that the war is over and peace conditions are apt to exist by spring, everyone is asking what will happen. Will prices go down? Will wages be reduced? And now are we to regulate our own affairs? What about the war industries and the labor they employ—as well as the two million soldiers returning?

A thousand other important economic problems press upon us—all vital to your welfare—and the responsibility for their correct solution rests upon you and every other intelligent forward-looking business man.

Under pressure of a common enemy, business and government successfully united in a common cause. Difficult as they were, the problems of war converged upon a single military end and were as one-two-three in complexity compared to

the problems of readjustment now upon

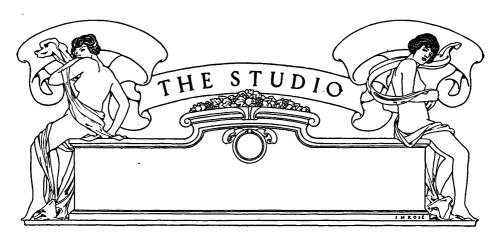
With suddenly changed conditions, we face a perplexing situation and business men realize, as never before, the importance of close coöperation.

Trade is sure to follow triumph, and success will come to those who grasp present-day opportunities. Old conditions have passed away, never to return, and the man who is thoroughly abreast of the times is sure to win.

Just at present all things are so much in the process of changing that there is very little chance to make decisions, but it is not too early to give earnest consideration to the many questions that must arise and serious thought to the decisions that will have to be made at some time in the very near future. But, above all, be optimistic, be "a bull on the United States of America," or if by nature a pessimist, keep quiet.

TO WRING from great endeavor not only the achievement, but the joy of it; to make the agony of toil contribute to the finished work a depth and ripeness denied to skill divorced from profound experience,—this is to have mastered the secret of art.

HAMILTON WRIGHT MABIE.



PRACTICAL PAPERS ON STUDIO WORK AND METHODS

Winter Light

As the days grow shorter, the light available for portraiture declines more rapidly in proportion to the time that the sun is above the horizon than it does during the summer months, and the photographer finds his working time all too short for what has to be done. There is in most cases an opportunity of using some form of artificial light, but even where this is installed there is always a temptation to work up to the last possible moment before switching it on. There are also very many studios where no artificial light but the magnesium flash is available, so that the photographer has to make the best of what day-light there is, and therefore cannot afford to miss any means of getting pictures for which he will not have to apologize. It will generally be found that the actual lighting is not so much at fault if sufficient exposure can be given. Thus, the first problem to be solved is to make sure of the lighting as it exists. As a commencement we must see that what light is used is as pure in color as the circumstances permit, and to this end the glass of the studio, the white blinds, head screens and reflectors are perfectly cleaned; also that the glass is not actually discolored by exposure to light and a smoky atmosphere. It would surprise most people to see the difference in color between a sheet of glass taken from a window after ten years' service and a new sample of the same quality. The difference can usually be seen between the center of the pane and the margins which have been protected by putty. Ground glass (besides this particular form of deterioration) suffers from a disinclination to give up all the carbon deposited on its rough surface by any method of cleaning which can be applied to it in situ. Perhaps the best cleaning material for all studio glass is one of the polishing soaps of the Monkey Brand or Sapolio type. This serves the purpose of the old tripoli and ammonia cleaner, of which wet plate workers know the efficacy. It should be remembered that in large towns the smoky atmosphere deposits a thin film of tar upon the glass, and this is difficult to remove with water alone. Hence the use of petroleum by many professional window cleaners.

Next to the glass itself, the white blinds or curtains demand attention. These are often left so long unwashed that they are practically brown, and stop out almost as much actinic light as the dark ones, giving little or no diffusion. In studios where festoon curtains are fitted, it is a good plan to have a second set, thinner than the ordinary, for winter use, which can be put up clean when the light begins to weaken. The same course can be followed with the circular head screens generally used. With regard to the lighting of the sitter, a much larger expanse of glass may be uncovered than is permissible in a good light; in fact, at the camera end the top and side lights may be quite open. The sitter is placed only as far under the blinds at the other end as may be necessary to secure modelling. Of course, only plain lighting should be used; "Rembrandts" or other fancy effects should not be attempted except in a good light.

Most portrait photographers use as rapid plates as they can get, but those who are in the habit of using them of a speed of about 200 H. and D. should remember that there are brands nearly twice as fast and still capable of giving good plucky negatives. Iso plates are slightly quicker in a yellowish light than ordinary ones marked with the same speed number. One of the pitfalls in winter work is the use of a positively warm developer. This often tends to give the hardness which it is desired to avoid. In this, as in most other things, the middle course is the safe one, the best results being obtained with a temperature not exceeding 70° F. Another mistake is the use of a strong solution. This again tends to contrast, as does prolonged development. Many under-exposed plates are spoiled by developing for shadow detail when none is present. The consequence is that all the detail in the high-lights is lost, and the result is a print in two gradations or "soot and whitewash." The best way to warm the developer is to warm the dark room, and a convenient way of doing this is to place a small oil stove or electric radiator below the sink, so that this shall be the warmest spot in the room. If the solution be warmed and used in a cold room, it soon cools to the surrounding temperature and becomes less active. Herein

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is one of the advantages of tank development, as we have a larger body of solution to deal with and, moreover, can readily use a thermometer while developing to see that an even temperature is maintained. Some developers are more susceptible to variations in temperature than others. Hydroquinone, for example, is almost inert at 40° F., and will then only yield a faint image

upon a fully exposed plate.

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One of the best ways to utilize a poor light is to get plenty of it through the lens. Rapid plates have led to a practice of using needlessly small apertures. These, of course, give depth and make focussing easy, but in the winter should be avoided. In the old days people used f/4 lenses, because they could not get full exposures with smaller apertures except in the best of light, and they had to learn how to get the best possible definition at this aperture. This is a matter calling for good artistic judgment and considerable practice with the particular lens in use. Many lenses have a slight chromatic error, which is not noticed at f/6, but which gives an appearance of want of depth in the negative with a larger aperture, the reason for this being that after the operator has carefully chosen a point would give good average definition throughout the picture he finds that the lens has rendered this point less sharp than another, so that all his careful adjustment is wasted. this peculiarity is recognized, it is easy to allow for it in focussing, and this many of the old operators used to do without knowing why they did so.

In one poorly lighted studio which we call to mind the operator was driven in winter to reinforce his lighting by means of a large cheval glass, which he placed at different points in the studio with great skill. His plan was to admit as much light as possible, even to the point of general flatness, and then to put in the dominant light with the mirror. In the case or studios which have the walls of rather a dark tint, light draperies hung over them, or a large white background judiciously placed will greatly improve the general illumination without giving a decid-

edly "reflector" effect.

Although these hints apply to working in all kinds of poor light, they will be more applicable to dull days than to a rapidly fading light. After three in the afternoon at this date every minute makes a considerable difference in exposure, and soon no dodges are available. Then we must either turn on the current or make appointments for another day.—Brilish Journal of Photography.

Cleanliness in the Studio

When a youngster I frequently saw photographers' hands, wrists, arms, shirt-fronts, in fact, their clothing generally, covered with black stains. I was naturally curious as to what caused these stains, and was told, "Oh! the photographing business." Years afterward, when I began experimenting in the photographic line on my own account, with the old wet plate, I acquired these stains likewise, and supposed, of course, that they were part and parcel of the photographic business. I, however, had within

myself a spirit of orderliness; and as I grew older I found that if I were orderly in my habits and methods, I became also more cleanly, less spotted, less stained, consequently presenting a

much better appearance outwardly.

I early adopted the motto, "A place for everything, and everything in its place." By following this method in the photographic line I was always able to place my hand upon the bromide bottle, the restrainer, the accelerator, or any other bottle in the dark room without hesitation. I found also that by following this method, I knew where each kind of mount was, each kind of paper, each article of general use, either in the workroom, dark room, operating room or office. There was no time wasted in hunting for things.

I was astonished on one occasion to have a young lady from Boston declare to me that while she was as neat as possible in her housekeeping arrangements, she found it impossible to be orderly. How these two, neatness and orderliness, can be separated I cannot understand. It appears to me that one is almost synonymous with the other. At any rate in my work through life I have found that the carpenter who has no especial place for his tools, who works ankle or mid-leg deep in shavings, loses more tools, and spends more time hunting them than is consumed in the actual work upon the job in hand. Two or three minutes will clean the place, while he spends half an hour in his search for a small tool which could be purchased, new, for half of the money necessary to pay his wages for that amount of time.

Why photographers should be more uncleanly than people in other branches of business is another astonishing thing to me. I have been told several times that I need never expect to make any money in the photographing business unless I would walk ankle deep in wet papers, trimmings, broken glass, etc., and that it was simply useless to undertake to keep a studio clean. I have not had the opportunity of visiting many of the studios of my professional brethren. One, however, I did visit, which was the means of giving me a severe cold, threatened symptoms of pneumonia, typhoid and goodness knows what not, from the fact that the only dry place in his apartments was on the top of the bed. As I remember, he had three apartments; one, a bed room in which the bed was curtained off, leaving room for a desk, to answer as an office; another one in which his camera for enlarging purposes was backed up against a window, and the third, joining these two, in which all kinds and classes of work were done. The sink leaked; the table was full of water; the blotters upon the table had taken up as much water as they could, but were inadequate for removing it entirely. The water flooded the floor of this room, and over the sill into the camera room, and was only kept from encroaching on the office by a dam of wet paper, which the operator had constructed for that purpose. His waste basket was the floor at the foot of the bed. That is, when he was in his office. Elsewhere it was under foot, just where he happened to be. He showed me his camera, but in going from the camera to the street my shoes became so thoroughly soaked that I not only left wet footprints on the sidewalk, but took a severe

cold, which caused me to more or less neglect

my work for several days.

Another studio which I visited was apparently well conducted so far as the reception and operating rooms were concerned; but in the dark room it was the same proposition as in the former case; and even worse, since in this dark room dry pyro, dust from the floor and ashes from cigars or pipes were so dispersed through the air, that it was impossible to touch anything in that room, whether paper, plate, print or negative, without impregnating it with more or less of this accumulated dust. In fact, by an actual test, a man rubbed his finger along the window sill and then touched a freshly exposed plate and attempted to develop it. There was so much hypo on that plate that it absolutely refused to develop.

Now when dust and dirt are allowed to accumulate after this fashion how is it possible for one to do good, clean and economical work? know that many photographers, even those of many years' experience, turn out good pictures, but how many do they spoil in order to get the few good ones they do turn out? I have seen professional photographers condemn paper, and condemn plates, declaring that either paper or plates were faulty, when I am positively sure that the trouble was simply and solely in the dirt which the paper or plates had acquired in their

manipulation.

Mind, I do not mean that the man who wears rubber gloves or tips (except to prevent poisoning) is the man who does the best work. On the contrary his work is generally the most sloppy. Get into it with both hands; but no necessity

for getting in with both feet.

I have seen men so careless that in going from room to room they have left drippings of hypo to mark their entire course. Did they stop to wipe it up? No, they didn't. Did they call somebody else to wip it up? No, they didn't. They simply let it evaporate and then be tracked all over the house. I have seen men carry dry hypo into the dark room, before opening the can, spill it upon their drain board, then just give it a rub with their hand, or coat sleeve, from the drain board to the floor, allowing it to mingle with the dust, dirt and other things incidental to one's traveling about. I have also seen other men so careless in their solutions with caustic, sulphite or volatile solutions that they will leave drainings or drippings of these solutions almost anywhere and everywhere; not only in the dark room and the workroom, but even in the dressing room as well as the operating room.

One thing many workers neglect and that is the precautions they should take with their heaters, whether alcohol, gas, gasoline, coal-oil, or even electrical. Many use their heaters for warming their lunches, or for general cooking. Nothing greasy, or which will cause fumes or vapors of any kind, should be heated over these.

I have known a man so foolish as to cook his dinner of "steak and onions" over the heater in his dark room. What kind of plates or prints can such a man turn out? A fine combination, truly, grease, smoke, soot, ashes, cinders, and a photograph. With such work it is not at all surprising that people are shy about ordering photographs of themselves.

It is no uncommon thing in the average studio when a lady calls on a warm day and desires a drink of water, that the glass, the only glass, is not to be found. "Who had it last?" "I didn't, you did." "Well, it must have chemicals in it in the dark room." It is then a hunt for the glass, which is probably not found and the lady customer must drink from a half clean graduate. The glass when finally found has been used for a small amount of refuse from a soda, or a potash, or a metal solution, the necessity for which could easily have been prevented if the operator were in the habit of filtering his solutions. All of these things contribute more or less to filth and nastiness.

An operator, covered with stains and marks of the hardships of his profession, is not an inviting object to the sitter. The prints that man turns out cannot, from very force of circumstances, be, as an average, clean and presentable. man's reception room is enough to discourage any sitter; and as for such a man's dressing room! If by some force of circumstances he should provide a brush and comb, who in the workd would

care to use either?

The operator of today should not only be clean and neat in his own personal appearance, but from the fact that competition has reached a point wherein pennies must be saved in order to earn dollars, every print as well as every negative must be a good one. So long as that man is surrounded with dirt, dust, wet, slime and such other concomitants of a disorderly, poorly arranged and badly cared for studio, he can never expect to make a fortune in the photographic business. We see, month after month, studios for sale. No, while I admit that the photographing business, for the professional, is not today what it was years ago, I will venture this remark, that if anyone will take the opportunity to investigate, they will find that those who soonest drop out, and who soonest become discouraged, are those who have not kept their establishments in an inviting condition, and who are what I call "dirty men."

I find in my studio that it is much easier to keep things clean than to allow any accumulation of waste, either in the shape of paper, broken glass, old corks, old plate boxes, etc., and that, after the first cleaning, the subsequent keeping clean is a very small item, and is of such incalculable benefit that the actual expense of cleanliness cuts a very small figure when compared with the inviting appearance of a clean, well ventilated establishment, and a saving of stained, thumbed or otherwise spoiled negatives or prints.

The Art of Selling

THERE are many grades of photographic business, and in one respect they nearly all resemble one another; their owners do not recognize the value of skilled salesmanship. The fundamental error is in forgetting that the first duty and concern of the "receptionist" is to sell, and not to write letters, spot prints, and pack parcels. Photographic portraitists cater for much the same class of folk as do milliners, drapers, and jewellers, and the former would do well to study the methods of the latter when it comes to handling a prospective customer. If

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a lady goes into a milliner's, she is at once received with politeness, not unmixed with enthusiasm, and every effort is made, not only to satisfy her wants, but to supply only such articles as will bear subsequent criticism. Sometimes the customer will take a fancy to a "creation" that is quite unsuited to her face or figure, and then it is the task of the adroit saleswoman to lead her thoughts away from the unsuitable to the suitable style, knowing that every error in taste helps to deteriorate the reputation of the business. Compare this with the procedure of the average photographic reception room. The customer enters, looks round, and sees a young lady busily engaged at a desk or table. By the time she has reached her the receptionist has laid down her brush or pen, or, worse still, left off typing, and usually, civilly enough, gives attention to the customer's inquiries. More often than not the customer is led to a table covered with a heterogeneous heap of specimens, and kept standing until a selection is made, when the receptionist hastens back to what she considers her work after an annoying, but necessary interruption. Let us for a moment suppose that we transfer the milliner's assistant to the reception room, tell her the prices of the various styles and which it was most desirable to sell, what shall we see? The customer met half-way up the room, ushered into a comfortable seat in a good light, her dog snugly disposed of on a chair or cushion, as a preliminary to entering upon the business of showing specimens. Now comes the test of ability; some few people know exactly what they want, others think that they do, while the rest are usually in a hopelessly undecided state. All must be dealt with so as to ensure the best possible return, and this cannot be done if there is any haunting remembrance of prints promised for the evening's post which are yet unfinished. We are taking no hypothetical case; it is what is happening daily all over the country. Even in the most humble class of studio there is an opportunity to get from postcard sitters orders for enlargements and locket pictures if the assistant has the time and ability to do so, while in the higher grades the possiblities are practically unlimited. A word of caution to the aspiring salesman may be useful. The push must be there, but it must be carefully concealed. There is nothing a purchaser resents so much as being dictated to, or having certain lines thrust upon her; the business must be done, not by driving the customer into the desired course, but by guiding them into it without their knowledge. From the nature of the business a photographic saleswoman can afford to be more intimate in conversation than a milliner or a jeweller, but such familiarity must never be allowed to exceed due limits. If suggestions as to style of picture are given they must not be accompanied by reasons, unless the reason is flattering to the sitter. For example, a sitter may be attracted by a beautiful profile specimen, while possessing no qualifications for expecting such a result in her own case; naturally the receptionist will not enlarge on this fact, but

dwell upon the expressiveness of the eyes in a full-face picture. A mistake that is often made is to judge the means and taste of the sitter from their apparel and style. One salesman told us of his chagrin on discovering that a shabby old man, from whom he had taken a five shilling order, was a wealthy earl, who would probably as willingly have paid as many pounds to get the best possible result. On the other hand, it is just as unwise to make the modest customer feel that his order is insignificant. Later on his circumstances may improve, and he is not likely to forget the place where he received courteous service. Every satisfied customer is a living advertisement. We have known an instance where the initial order was half-a-dozen cartes from a housemaid; these brought an order from the housekeeper, next came the governess, and finally the whole family patronised the lucky photographer to the extent of three figures in nearly every year. Here a good print in the first place made the first opening, and sustained good quality of work, with courtesy of manners, carried the business through.

It is unfortunate that most folks believe that salesmen are "born, not made," or there would be more eagerness to take advantage of the courses of lessons on salesmanship which are now to be had at most of the business colleges and polytechnics of our large cities.—British Journal

of Photography.

Portraits or Pictures?

THE first object of the professional photographer should be to satisfy his client, the second to satisfy himself. When these two objects can be merged into one, all is well, but if either has to be sacrificed, it must be, to some extent, the latter. The skilful operator, who has thorough control of his light and materials, usually has a predilection for a particular style, and often loses sight of characteristic points in the sitter in bringing him into conformity with it. Hence the less technically skilled operator, even the raw amateur, often scores a success by securing a real portrait, the imperfections of which are passed over for the sake of its human interest. This is especially the case with people who do not often visit the photographer, and who feel rather ashamed of doing so. With such there is often a feeling of constraint and a fear of looking foolish, which results in a stiff, repellant picture, with which neither the sitter, his friends, nor the photographer are satisfied. It is far better with subjects of this class to concentrate all one's powers on the task of reaching the real personality of the sitter, and of overlooking any little defects of pose or drapery. With many people the mere request to move the head, the arms, or even the hands is enough to produce a nervous tension which is reflected in the face; while there are others who feel that they have not received proper attention unless they have been fussed about before exposure.—British Journal of Photography.



Eastman Kodak Confident of the Future

[In the following quickly prepared statement, made at the request of *Printer's Ink*, Mr. L. B. Jones, of the Eastman Kodak Company, provides an excellent model of self business inquiry. He determines admirably the points of the company for his company. He has a basis for a strong program of action in the reconstruction period.— Ed. P. J. A.]

KEEPING our forces busy and happy does not promise to be much of a problem. Our war work has not been a large enough percentage of our total business to mean that a big gap will be caused by its loss. For some time ours has been a manufacturing and not a selling problem and the release of labor, and particularly of materials, will merely mean that we can again take good care of our regular trade.

The war, not just our seventeen months of the war but the whole four years of war, has made important changes in the photographic business. It has shown that we can make some things that we thought we could not make and that tremendous economies can be made in other things—some of which economies will, beyond a doubt, become permanent.

Before the war nearly all the photographic developers used in this country were of European manufacture, largely German—especially those that were coal tar derivatives. These are being made more and more successfully in this country and all that this great industry needs is protection for a reasonable length of time to insure its stability.

Even before the war, American lenses were fully the equal of German lenses, although they had not yet, through advertising and use, established themselves as such. In spite of the fact that it became necessary to make even the glass right here in America, the only lens problem here now is the problem of quantity production. American anastigmat lenses are the equal of any lenses in the world in speed and quality—with the war demands removed, they should soon be produced in ample quantities.

The Photographic Paper Problem Solved

A few years ago all the raw paper coated for photographic purposes came from Europe. However, American manufacturers had been partly

filling the demand for some time and it so happened that the very week of the outbreak of the war in 1914, the Eastman Kodak Company had just begun the operation of a small experimental mill, erected for the sole purpose of making paper (photographic raw stock) of superior quality for use in its own works. The product of this mill was so satisfactory that we have since erected a new and larger mill, now partly in operation, which will eventually make us entirely independent of the European supply.

In photographic chemicals, in lenses and in paper the war has hurried America into being self-dependent. It has also taught economies. Two years ago you would have found tons of discarded negatives in the cellar of every long-established photographer. Today those old negatives are gone and the photographer has a very comfortable check in their place. The emulsion has been washed from the negatives, the silver recovered from the emulsion and the perfect glass recoated and sent out again as dry plates.

Every good negative has about half as much silver in it as the original plate or film had. Similarly, every photographic print has been relieved of a large part of its silver during the development process. This silver has been going down the waste pipes of the dark room sinks at an estimated rate of a ton a week. With silver hanging around a dollar an ounce, saving this waste became well worth while and now that the practice has been established, it will no doubt be continued even though the price of silver drops.

Soft Pedal for Sales

About our advertising? For more than a year it has been confined almost exclusively to "Pictures from Home," the only exception of importance being our institutional campaign wherein we are trying to show the important work that photography is playing in every world activity, including war. Indeed, we have even gone so far as to say to our dealers, through the Kodak Trade Circular, that the flippant clicking of the shutter should be discouraged in order that there may be no lack of materials with which to provide pictures from home for the boys over there.

Our constitutional campaign is for the future. We hope, now that the armistice has been signed, that it is for the very near future. All during

the war period we could sell more goods than we could make, but we have run this institutional copy because we do not want to be forgotten, because after the war we want the dealers, who handle Kodak goods, to be in an enviable position—want to make the word "Kodak" mean even more to them in prestige than it meant before America tackled its little job across the sea.

Pictorial Photographers of America Print Exhibit

At the monthly meeting of the Pictorial Photographers of America, held at the National Arts Club, New York, on December 2, 1918, an exhibition was given of photographs done in bromoil and bromoil transfer, the work of Dr. A. D. Chafee, well known here and abroad for the excellence of his technic in these media.

The display was up to his usual standard, and his subjects were most pleasing. The doctor gave a very instructive address on his methods and aims, and the description of the manner of print-

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rear picpio 31 V. Miss Edith R. Wilson, of Mount Vernon, N. Y., also exhibited the original prints from which the Macmillans' illustrated her *Mother Goose Book*. These photographs show Miss Wilson to be a very clever and original artist. She has over two hundred dolls, some of which she made herself, and these were used entirely in making the illustrations. The figures were posed in an ordinary room, with only the usual window lighting, a Smith S. A. lens being employed, stopped slightly for depth, but not sufficiently to destroy the quality. A poem had been written for the illustrations—not the other way about, as usual—and Miss Wilson's whole achievement was seen to be most successful and remarkable.

Some work of the United States Navy and Marine Corps' photographers was also shown by Ensign James N. Giridlian, R. F. C., a very popu-

lar member of the Association.

The Annual Pittsburgh Salon

The sixth annual Pittsburgh Salon of Pictorial Photography will be held in the Department of Fine Arts of the Carnegie Institute, Pittsburgh, Pa., March 3 to 31, 1919, inclusive.

All prints submitted will be passed upon by an impartial and thoroughly competent committee of selection. Prints possessing the highest merits in artistic expression and execution will be hung.

As has been our rule heretofore, no picture is eligible that has been exhibited before in the

United States.

Entry blanks, containing full information and conditions of the Salon, may be obtained by addressing Charles K. Archer, Secretary, 1412 Carnegie Building, Pittsburgh, Pa. Last day of entry, Monday, February 10, 1919.

The Tax on Photographs, Etc.

The tax on photographs, etc., in the revised draft of the new Revenue bill, the 10 per cent. tax on dry plates and films has been reduced to 5 per cent., and the tax on photograph productions and reproductions has been stricken out entirely.

The French Photographic Society

It is pleasant to see a sign of restoration of the activities of the French Photographic Society, which since the outbreak of war has practically suspended all its usual public functions. True, the sign is a small one—the publication of an issue of the Society's Bulletin covering the period December, 1915, to December, 1917—but there is the expression of hope that, as the national crisis is now positively subsiding, the society may look to resume something like its normal life. A large proportion of its officers have naturally been occupied upon military duties. Its secretary, Captain Cousin, as he now is, has taken an active part in the photographic section of the air service, and has been awarded the distinction of Chevalier of the Legion of Honor. Death has removed from its ranks a prominent member in the person of Lieut.-General Houdaille, with whose name are associated several investigations in scientific photography; and it can hardly be expected that when peace is restored to France the society's membership will not have been sadly depleted by the protracted conflict. Nevertheless, we join with our French friends in anticipating the days when thoughts can be again devoted to the art in the foundation of which their country took so distinguished a part.

Photographic Observation of Variable Stars.

THE work of observing variable stars has enlisted the services of a great number of devoted astronomers throughout the world, a majority of them being amateurs. The recently published eighth report of the variable star section of the British Astronomical Association, an octavo of 352 pages, records no less than 16,217 observations mostly taken during the period 1910-14, by 34 observers. Some of these persons made upward of 2500 observations. In his introduction to the volume, Prof. H. H. Turner raises the question whether these laborious visual observations are not destined to be replaced by photography, which has done so much for other branches of astronomy. There is at present one special difficulty-most of the variable are red or reddish in color, and it takes a long time to photograph them, or a large telescope, or both. Professor Turner mentions a photograph made at Oxford of the region of the very red variable S. Cephei, with exposure long enough to get the faint comparison stars, so as to determine their places. There was not a trace of the variable itself on the plate, though the star was then near its maximum. Great improvements have, however, been made recently in the photography of red light, and more may follow, so we need not assume that the present difficulty will be perma-

Photographers' Plan to Educate the Public

WITH a view to improving not only trade conditions but the artistic results of photography, forty of Detroit's leading professional photographers are organizing. A yearly exhibition is planned, and a campaign will be made to educate Detroiters in the possibilities of photography until a mere "shooting" will not satisfy.



The photographers say that to be a real success in their business a man must combine chemistry, art, mechanics, psychology and the ability to act—for the benefit of those weeping little ones who refuse to be beguiled into laughter by the "birdie."

Professional Photographers' Society of New York Fifteenth Annual Convention

PRESIDENT LOOMIS writes us that plans are under way for the largest convention ever—for the Fifteenth Annual Convention of the P. P. S. of N. Y., to be held in the Masonic Temple, Elmira, New York, February 25, 26 and 27. Full particulars will be published in next month's issue of the JOURNAL.

Death of Sumner Bradley Heald

SUMNER BRADLEY HEALD, a leader in the photographic world half a century ago, and said to be the first man to successfully retouch a photograph negative, died at his home, 24 Pleasant Street, Stoneham, Mass., on November 7. Mr. Heald did his first camera work when daguerreotypes were in vogue, and followed the art through the ambrotype era to that of the photograph. For years he was the operator at the Warren Studio in Boston, and later conducted business for himself. During and immediately following the Civil War he was a prominent camera artist in New England. Mr. Heald was in his seventy-fourth year.

The Tides of Money

Money is never still. It is always moving.

It is always coming in or going out.

That is why you must have a system in your office, to tell you how the tides of money have flowed during the week.

That is why you must watch the leaks—the wastes—the expenses—the dead departments—the unprofitable managers.

Keep your eye on the tides of money.

A New Photographic Mordant Dye Process

THE first photographic mordant dye process to attract attention was the silver-iodide process of Dr. Traube (U. S. Pat. 1,093,503, 1914). Metallic silver photographic images converted to silver iodide and immersed in solutions of basic dyes become strongly colored. If the dye is then fixed by tannin, the silver-iodide can be dissolved out, leaving a transparent dye image. Traube's leaving a transparent dye image. Traube's method was improved upon by Tauleigne and Mazo (U. S. Pat. 1,059,917, 1913), who showed how to produce a silver-iodide image having a stronger affinity for the basic dyes, and incidentally that by first hardening the gelatin with alum and then treating the silver-iodide image with a strong solution of potassium iodide it was made so transparent that for most purposes it was unnecessary to dissolve out the silver-iodide image. The step of hardening the gelatin in alum to prevent it from softening and dissolving in the strong potassium iodide solution was omitted in the United States patent specifications, but was published in the *British Journal Photographic Almanac*, 1912, page 653. Hoyt Miller (U. S.

Pat. 1,214,940, 1917), as a result of experiments with the process without alum hardening, declared the process unworkable, and broadly claimed the production and dyeing of a transparent silver-iodide image, he hardening the gelatin with formalin. I have myself operated the Tauleigne-Mazo process with perfect success.

Incidentally it had been discovered that silver

ferrocyanide, silver chromate and some other silver salts could be similarly dyed, but not with satisfactory results. Fox (U. S. Pat. 1,166,123, 1916), disclosed the fact that a vanadium-toned silver image mordanted basic dyes, and Crabtree and Ives (priority to Crabtree) independently discovered that a copper-toned image had the same property to a very notable and useful degree. The copper-toned image, like the transparent kind of silver-iodide image, is sufficiently transparent for most purposes without "fixing out," but can be made perfectly transparent by fixing "hypo" without first fixing the dye image with tannin. It has the disadvantage for some purposes that the copper-ferrocyanide image is itself colored (red-brown) and will not serve as the base for pure blue and green images. It has proved perfectly satisfactory for the production of orange-red images in combination with a cyanotype print in the same colloid layer in my colored moving picture process (U. S. Pat. 1,278,668, 1918).

Recently, I have discovered a new method of producing mordant-dye photographic images, which I think is superior to any heretofore known. The mordant is a chromium compound the exact nature of which I have not yet determined, but it is not silver chromate, which is of a deep red color, while the image which I produce previous to dyeing is of a very pure, though pale, yellow color. It is produced very simply, quickly and cheaply, by bleaching the silver image in a solution of equal parts of potassium ferricyanide and chromic acid, the action of which is analogous to that of potassium iodide in that if the solution is weak the image is not transparent, but if the solution is strong, the image is perfectly transparent and of a pale, though pure yellow, color. It is necessary to wash out the free chromic acid after bleaching. The pale yellow image thus produced has a much stronger affinity for some of the basic dyes than either silver iodide or cop-per ferrocyanide. In fact, the silver image, for the best results, must be thin and superficial.

My bleaching solution is made with one ounce each of potassium ferricyanide and chromic acid in one gallon of water, at which strength it acts very quickly and produces a transparent yellow image. Transfer to running water should be made immediately when the image is completely bleached, to avoid over-hardening of the gelatin by the chromic acid. Long washing is necessary to clear out the free chromic acid, but it discharges rapidly in water containing a little soda bicarbonate, and the image also dyes up quicker and clears more rapidly after dyeing if the soda bicarbonate is used. I always use it, but too long immersion whitens the image, reduces its transparency and produces a weaker, though still strong and brilliant, dye image.

A typical dye bath is made by dissolving 10 grains of saffranin in 4 ounces of alcohol and

a result of experiments ut alum hardening, deworkable, and broadly and dyeing of a transge, he hardening the have myself operated ss with perfect success. discovered that silver nate and some other ly dyed, but not with (Ú. Ś. Pat. 1,166,123, at a vanadium-toned ic dyes, and Crabtree btree) independently ned image had the ble and useful degree. ke the transparent s sufficiently transthout "fixing out," ansparent by fixing he dye image with tage for some puranide image is it-

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adding it to one quart of water made slightly acid with acetic acid. For complete dyeing, an immersion of half an hour or more may be necessary. This will stain the entire film deeply, after which it may be cleared by washing in water containing a very little acetic acid. Other very active dyes are malachite green and auramine.

The images which have been whitened by long soaking in soda bicarbonate solution have the same appearance and transparency as silver ferrocyanide images, but have many times more mordanting power-more even than silver iodide. [Communication from the Hess-Ives Laboratories, by F. C. Ives.]

Determining the Freshness of Eggs by Photography.

PALMING off as fresh, eggs that are several weeks or even months old is quite a common fraud, expecially at present, when war-time conditions have caused a scarcity of the produce and increased the cost. In the trade, eggs are classified according to freshness by the process known as candling, consisting in observing their transparence, which depends mainly upon the dimensions of the air-spaces. With a view to its value in legal expert testimony, the author has developed a more precise method of visualizing the contour of this air-space in such a manner that it constitutes a permanent and comparable legal exhibit. This result has been secured by photographing the eggs by transmitted light upon extremely rapid plates. In this way the contour of the air-space, recorded in true dimension, can be accurately measured. In the course of experiments it was found that radiography yielded distorted images quite inferior to those obtained

by visible light. A large amount of practical information on candling and other features relating to the egg industry will be found in the following publications of the U.S. Department of Agriculture: Professional Paper No. 51, July 20, 1914; No. 224, April 28, 1916. Yearbook Separate 552, 1910; 596, 1912; 647, 1914. Bureau of Chemistry, Circular No. 98, July 31, 1912.—Comptes Rendus des Seances de l'Academie des Sciences.

New Orders Permit Taking of Photographs

WE are informed that instructions have been given to rescind paragraphs 9 and 10 of Special Regulations No. 102, and to amend Paragraph 8

to read as follows:
"Ordinarily, photographs of military subjects concerning which no secrecy is required may be taken freely without restrictions other than such as may be imposed by the Commanding Officers at camps, ports, fortifications, armories, arsenals, factories, and other places connected with the national defence, in the interests of discipline and good order and with due avoidance of unfair discrimination. Nov. 30, 1918."

The following are copies of "Special Regulations No. 102:"

8. The object of these regulations is to remove all unnecessary restrictions and mate public or private interest in so far as is compatible with discipline and good order. Ordinary photographs of military subjects, concerning which no secrecy is requisite, may be taken freely about open camps without restrictions other than such as may be imposed by the commanding officer, having due regard to the avoidance of unfair discrimination. The term "open camps" is understood to include all divisional camps, replacement camps, and officers' training schools. In these places the intelligence officer shall have charge, under the direction of one commanding officer, of such details of registration, limitation, and inspection as may be found necessary for the proper control of civilian photographers within the reservation. The freedom to photograph in open camps may be revoked or limited at any time by the commanding officer when

exigencies arise demanding secrecy. 9. None but official photographers of the Signal Corps, or other recognized bureau of the War Department or of the Navy, or of the Committee on Public Information, properly identified by a permit secured from the Director, Military Intelligence Division, shall be allowed to make photographs, moving pictures, drawings, or pictorial records of movements of troops, experiments in matériel, experiments in intrenchments or experiments in formations, fortifications, armories, arsenals, or factories connected with the national defense, except as hereinafter provided. The taking of photographs from kites, aëroplanes, or balloons, and the taking of photographs at ports of embarkation and at camps connected with such ports, and of troops aboard transports, are forbidden, except to commissioned officers with special permits from the Director, Military Intel-

ligence Division. Progress pictures for record purposes only may be made within the prohibited reservations hereinabove referred to by properly accredited civilian or other photographers having permits from the Director of Military Intelligence, provided, however, that prints of all pictures be submitted in triplicate to the Director of Military Intelligence. Under no circumstances may progress pictures be used for advertising, exploitation, or commercial exhibition.

The Fifth Year of the Clarence H. White School of Photography: Calendar for 1919

I.—Opening of School and Winter Session, classes daily, 28 weeks. November 11 (opening delayed 2 weeks, owing to influenza epidemic).

Thorough training for vocation of photographer. II.—Evening Course: Class, Tuesday evenings, 28 weeks. November 12. To help the photographer with his various problems.

III.—Special Midwinter Course. Eight weeks, classes daily. January 13, 1919. To acquaint the photographer with various advanced methods

of developing, printing, mounting. IV.—Printing and photography related. January 6, 1919. For a better relation of photography to the printed page.

V.—Course for professional photographers, daily, 10 weeks. March 30. For the professional photographer no longer satisfied with the bald, hard portraits of the studio.

VI.—Spring Session, at Canaan, Conn., 10 days. May 1 to 10. Ten days' work in the country at the most beautiful season—blossom time.

VII.—War Work. Students can enter at any time. The camera is the eye of the army. Many experienced photographers are needed to help win the war.

VIII.—Tenth Summer Session, Canaan, Conn. 6 weeks. July 7. Combination of pleasant summer outing and instruction in photography.

Catalogue, with full information, mailed on request.

Address, CLARENCE H. WHITE, 122 East 17th Street, New York City.

The Southern School of Photography

WE are advised that this school opens the early spring term on the first Monday in April, well equipped and under the personal direction of W. S. Lively. We are glad to recommend this old established institution to any who may contemplate a course in practical photography. Write W. S. Lively, McMinnville, Tenn., for further particulars.

"How Motion Pictures are Made" By Homer Croy

THE first American book to tell graphically, picturesquely, and non-technically the wonderful story of this amazing art and industry. In this new book every side of the industry is covered by a man who has loved motion pictures, who has made and exhibited them, and to whom the greatest studios and plants have been thrown open by their owners, because at last there was to be written an intelligent, dignified, and interesting story of the industry. Such fascinating phases as submarine motion pictures, the latest developments in animated cartoons, employing color pictures, regiments of artists, studio work, outdoor work, all the photographic and dramatic details of taking the smallest and the greatest of motion-picture plays. There is not a single technical obscurity in the book, every one can read it and understand it and be thrilled by it, and yet there is not one technical operation omitted. The illustrations, scores of them full-page, cover every phase of motion pictures. Illustrated. Royal 8vo, cloth, \$4.00. Harper & Bros., New York.

Coöperation

What does this word mean to you? The dictionary says "working in harmony with one another."

Are you going to balk because some one else is showing and leading you in the right direction or will you help them?

Help is the main word in cooperation. The man or women who will not, generally follows in the same old rut until he or she dies.

What would happen to your home if you did

THINK IT OVER.—The Fellow Worker.

Chips from a Photographer's Workrooms

THE UNVENTILATED DARK ROOM is an unhealthy one. Too many photographers still cling to the notion that any cramped little hole is "good enough." The dark room is one of the most important rooms. It should be sufficient in size, convenient in arrangement, and well ventilated.

THE PHOTOGRAPHER who turns out a print mounted in slovenly fashion has not a single excuse — except carelessness — to hide behind. We have noticed in several show-cases—with low-priced work in them—prints trimmed with a jagged or slightly uneven edge, or not trimmed true, and uneven circles which have been first ruled with a pencil around a tea-cup and then clipped out with scissors. And they are not always mounted centrally true. Cutting shapes and cutters are cheap, and a little care does not cost a cent in hard cash.

WITH VERY OLD and very young people it is a fatal mistake to under-expose a negative. The negative must be fully exposed, and developed for softness. It will then require a minimum of retouching, and will give a maximum of satisfaction.

THERE ARE TWO WAYS in photography; one is to hunt around and make business, the other is to wait for business. Every successful man can say which is best.

In Winter, studios and workrooms are all heated. We do not nowadays put bottles of collodion before the fire in order that the contents may become workably warm. But in spite of that we have not yet entirely got rid of risk of fire. Many a good man has seen the business and work of years go up in smoke, and has begun again at the bottom. There is no absolute preventive of fire, but insurance will save ruin. If you are not insured, see about it today—not tomorrow. If you have a policy in your safe, see if the time is running out, and do not let it lapse.

BUBBLES DURING DEVELOPMENT. Some photographers (or rather, some photographers' assistants) seem unable to get hold of the knack of immersing sheets of bromide or other development paper without being troubled with airbubbles. Unless these are burst with the finger or with a brush they show as white spots on the finished print. Especially is this the case with very rough paper. To a certain extent bubbles trouble plates, but not so much as they do papers. They may very largely be avoided by immersing the paper film side downward in the developer; as soon as the paper is wetted it can easily and safely be turned over. The development of more than one print in one dish has a hidden danger, for in immersing a second print bubbles of air may be transferred from it to the first printadditional reason for having the first print face downward.

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DARK Room is an unny photographers still any cramped little hole dark room is one of the It should be sufficient trangement, and will

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The WORKROOM

ONTAINING THE LATEST PROCESSES, FORMULAE AND APPLIANCES NEEDFUL IN THE ART OF PHOTOGRAPHY FOR THE OPERATOR & WORKER

FLASHLIGHT PORTRAITS A NOTE ON PRINTING FRAMES PRODUCING AMBROTYPES WITH GELATIN PLATES SILHOUETTE PORTRAITS IN BAS-RELIEF FLASHLIGHT POWDERS TROUBLES IN WINTER WORK WHAT CAN BE DONE WITH A SPOILED NEGATIVE? HOW TO ACID-PROOF THE PHOTOGRAPHIC BENCH COLORING PRINTS AND LANTERN SLIDES WITH DYES THE IODINE SPIRIT REDUCER SOLUTION MAKING SEPIA TONES ON BROMIDE PAPER ARTISTIC PRINTS ON IVORY THE FERRICYANIDE REDUCER THE STRENGTH AND USE OF SOLUTIONS DEAD BLACK VARNISH PHOTOGRAPHING CHINA, ETC. THE REVERSING BACK AND THE SQUARE PLATE SUCCESS IN SQUEEGEEING THE CHOICE OF A LENS STUDIO SLIDES CHIPS FROM A PHOTOGRAPHER'S WORKROOM



THE WORKROOM

By the Head Operator



Flashlight Portraits

CERTAIN photographs suggest at the very first glance that they have been taken by flashlight. They are portraits, and the lighting is harsh and direct, generally coming from a comparatively low point, while there may be ugly shadows thrown by the sitter upon the background. It is possible also that the contrasts are too great, and the whole print has a disagreeable quality, which many workers believe to be unavoidable with this illuminant.

Such a belief, however, is a mistaken one, and we hope that any amateur who reads these lines, and tries his hand at this branch of work, will not be content to accept such results as inevitable, but will be filled with discontent at his own inexpertness until he can produce pictures from which all such shortcomings are absent. For it cannot be laid down too emphatically that they are the results not of the use but of the misuse of the flash, and that when this is properly worked there is no difficulty in obtaining portraits which do not give away the lighting system which was adopted.

Flashlight materials take two forms. There is in the first place, magnesium powder, which must be blown through a spirit or gas flame in order to ignite it, and there is flash powder, a mixture of magnesium with some oxygen-yielding compound, which explodes on ignition. It is very important to distinguish between the two, as there have been fatal accidents from the use of flash powder in a lamp made to burn magnesium powder. The magnesium powder is the safer undoubtedly, but with proper care flash powder

can be used without serious risk.

The quality of the results obtained in any case does not depend in the least upon which of these two forms of flash is chosen. That is merely a matter of the photographer's preference and convenience. Whether the picture will be a success or not, apart from the choice and arrangement of the subject, will depend upon the way in which the flash is used. Enough of the powder must be burnt; it must be burnt in the right place with reference to the subject, and the light must

be properly diffused and reflected.

It is impossible to lay down hard-and-fast rules as to the quantity of powder necessary, as this depends upon several factors, some of which cannot be definitely stated. Of course, the speed of the plates or films, and the aperture of the lens are important. They influence exposure in the same degree as in daylight work. The fastest plates to which the photographer is accustomed, and the largest aperture of the lens that will give him what he wants, are therefore indicated. There is probably some gain in using ortho-chromatic plates, but a good deal of very successful flashlight portraiture is done on the fastest of the non-orthochromatic kinds.

The factor in exposing which is most likely to be a novel one to the amateur doing this for the first time, is that of the reflected light. "Expose for the shadows" is the rule in this as in ordinary daylight work. The shadows will receive no direct light from the flock at all. They depend the shadows will receive no direct light from the flock at all. They depend the shadows will receive no direct light from the flock at all. They depend the shadows will receive no direct light from the flock at all. They depend the shadows will be shadows will be shadows with the sha direct light from the flash at all. They depend entirely on light reflected by the ceiling, floor, and walls of the room, and by any other surrounding objects. Moreover, the intensity of the reflected light will not only depend upon the color and reflective power of the surroundings, but also on their distance from the flash and from the sitter. The quantity of powder needed will vary with the color of the walls and floor.

The lighter these are, the less powder will be necessary. It will also depend on the size of the room; the largest room in an ordinary dwelling house may require five or six times as much powder as would be necessary in precisely the same conditions in a small room. Pushing this to the extreme, to make it evident at a glance, we might say that for a portrait at night out-ofdoors in the open, the use of hundreds of times as much powder could not possibly produce a properly modelled portrait without the aid of

reflectors

A small room with light walls and floor is best, therefore; and if we cannot use such, then we must aim at getting a similar effect by the use of reflectors. They are not so good, because one is nearly always tempted to have them small and near the sitter, which introduces false lighting; whereas they should be large, and far enough from the subject to avoid this. The floor, too, should be a reflector. A sheet spread upon it, from somewhere near the sitter, right up to the camera and beyond, will be a valuable help toward economy of flash powder, by contributing to the general diffused illumination of the shadows.

Many flashlight portraits suffer from the flash being too low down. The position must be deter-mined by the effect desired; but for ordinary portraiture, the light should fall upon the sitter from a point well above the top of his head, so that the vertical angle of the main illumination is somewhere about 45 degrees. There is always a temptation to put the flash as near as possible, so as to make the most of the light; but this can easily be overdone, as bringing the flash near to the subject chiefly intensifies the illumination of the high-lights, the shadows, which decide the exposure, may even be made darker by so doing. For a head and shoulders portrait, six feet will be quite as near as it is advisable to have the flash.

For similar reasons the light should not be used direct, but with a diffuser of some kind. A

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banner of very thin muslin makes a good one. It must be hung up where there is no risk of the flash setting fire to it. Tissue paper can be used: but several sheets would have to be joined together to make a large enough screen. Tracing paper is also a good diffuser.

There is no necessity to darken the room; in

fact, the more light from other sources which there is in it the better. Not that this is likely to be strong enough to give much help in the matter of exposure; but because it will tend to cause the sitter's eyes to appear more naturalthe pupils less expanded; and it will also take off from the shock of the flash. Particular attention must be given to see that none of these lights, nor the direct light from the flash itself, can reach the lens.

A serious difficulty in all flashlight work is that the lighting effect cannot be properly studied beforehand. There is no way of getting over this completely; but something can be done by the use of a portable lamp of some kind, which will give a good strong light. This can be put where we propose to put the flashlight, and the effect of the lighting examined, with the eyes where the camera is to be. We cannot generally use the lens and ground glass, as the light is not strong enough for us to see the image properly; if it were, we might find it better not to use the flash at all, but to make the exposure with that light itself, giving a time exposure, of course. Very interesting portrait work by artificial light can be done in this way; but further reference to it would lead us too far from our subject.

A matter that must be carefully attended toone that is frequently the cause of failure—is the possibility of reflected light reaching the lens from mirrors, glazed pictures, brightly polished parts of furniture, and similar objects. It is only by studying very carefully the effect, with the help of a bright light beforehand, that any sources of trouble from such a cause may be detected, and, when found out, removed. Otherwise not only may we have objectionable highlights in the picture itself, but they may give rise to fogging from internal reflections in the lens.

One of the points about flashlight work, which makes it very fascinating, is the facility it gives for what may be called fancy lightings. Thus, we can secure firelight and lamplight effects, a footlight illumination, and do on. In some of these, a diffuser may not be required, the strong direct light and the deep shadows being part of the scheme. The variations which may be made are very numerous, and open up attractive fields to the pictorial worker with a taste for experiment.

—Photography.

A Note on Printing Frames

THAT good contact between the negative and the printing paper is essential if the finest prints are to be obtained is a point too often lost sight of by the majority of workers at the present time. The old-time worker gave as much care to the "pads" for the back of the printing frame as he did to the condition of the frame itself; but today very few photographers trouble about them, and the back of the printing frame itself is allowed to rest directly upon the back of the sensitive printing paper. The main purpose of

the pad, of course, is to keep out damp, and for this reason they are still used in platinotype printing; but besides this, which even with the other processes is still most important, perfect contact with the negative is assured, and this is of especial importance when much used print-ing frames are employed, when it will be most likely found that the back springs have lost much of their original power. For ordinary purposes the card packings enclosed in the pack-ets of printing paper will be found quite good enough if a sheet of plain blotting paper is placed between them and the back of the printing paper, or, failing these, two or three sheets of blotting paper the same size as the frame may be employed, and so serve a double purpose, viz., the exclusion of damp and ensuring perfect contact between printing paper and the negative. Only recently we heard an amateur complaining of the poor definition of his prints, though the negatives were perfectly sharp. This was eventually traced to the use of a printing frame with worn springs. Two or three sheets of blotting paper were inserted as indicated above, and the trouble vanished. The foregoing are points frequently overlooked, and may be taken as examples of things little in themselves that are well worth attention.—Amateur Photographer.

Producing Ambrotypes with Gelatin Plates

In the early days of the wet collodion process the only picture that could be produced was a somewhat thin positive, produced with a plain iodized collodion, which, after being sensitized in a bath of nitrate of silver and exposed in the camera, was developed with pyrogallic acid solution.

Improvements were soon made by the intro-duction of a small percentage of a soluble bromide in connection with the iodides, and the development of the image produced by a solution of protosulphate of iron with acetic acid and

alcohol.

No matter what kind of collodion was used the process was still further improved by increasing the whiteness of the deposited silver by what was termed "alabastine solution." The secret of this preparation was kept for many years, in fact, until it was discovered how to turn the positive into a negative by intensifying with a wash of iodin and then blackening the film with hydrosulphuret of ammonium. This made possible the production of paper prints, thus multiplying the number of pictures at will without taking a sitting for every picture. When this improvement was made, then, and only then, did the secret of the composition of the alabastine solution leak out. It was a salt of mercury, correctly prepared so as to bring about the whitening of the image, and by this means produce an effect like alabaster. These mercurially treated images were known as the ambrotype, and very beautiful images they were when backed up with a dead-black varnish or a piece of velvet. Many such pictures exist today as perfect as the day they were produced. It will be shown in the present article how excellent positives can be made by using a gelatin dry plate in place of one of wet collodion. It will be necessary in the first place to obtain the right

kind of gelatin dry plate to secure the best results—a plate of medium rapidity, good latitude and rich in silver will be suitable. The plate being slow compared with those most in use for negative making, should produce the desirable quality of very clear shadows, so that when a black backing is used the clear portions will show up as pure blacks without any muddiness.

Either ferrous oxalate or metol hydroquinone may be used to best advantage in development, the better being the ferrous oxalate. Two formulæ are given. This will enable a choice to be made. The one which the operator can manipulate to the best advantage should be the one

employed.

The following formula for ferrous-oxalate developer will answer the purpose well, giving at the same time beautiful clear shadows, with all the requisite deposit in the high-lights. Too much stress cannot be laid upon the necessity of having every vessel that is to be used perfectly clean for use with this developer, because contamination with any other chemical will be sure to mar the desired effect. The following saturated solutions must be made up:

	Α				
Potassium oxalate	е.				6 oz.
Oxalic acid					20 gr.
Warm water .					30 oz.
	В				
Protosulphate of	iron				oz.
Sulphuric acid					drops
Cold water .		•	•	30	oz.
	C				
Bromide of potass	sium				⅓ oz.
Water			,		10 oz.
developing solution	on is	pre	nar	eđ:	at the ti

required for use, which will shortly be described. The following developer may also be used and gives excellent results:

ves excellent results:			
Metol			50 gr.
Hydroquinone			50 gr.
Dissolve in warm water	•	٠	30 oz.
Then add			
Sulphite of sodium .			240 gr.

150 gr. Shake the mixture well, allow to become cold, then filter through absorbent cotton into a clean bottle ready for use.

Carbonate of sodium

The next preparation will be that for use in whitening the image. The chemicals for this must be prepared in a glass flask, not in an enamelled iron pot.

Bichloride of mercury 100 gr. Chloride of ammonium . . . 100 gr. Distilled water

Dissolve the above by the aid of heat; then when dissolved add carefully fifteen ounces more of cold distilled water, than filter through absorbent cotton into a clean wide-mouth bottle, and mark it with a label "whitening solution." Place a plate in the holder, and arrange the sitter, accessories, etc., make the exposure in the usual way, only cut the time a little short, say if ten seconds would be the usual time for exposure for a negative, give eight seconds only, then proceed

to develop. Make up the developer for the ferrous-oxalate process as follows: take of A four ounces, of B one ounce, of C three or four drops only. When mixed as above described remove the exposed plate from the plate-holder, lay it in a clean tray, and pour the developer over the plate in one sweep. Rock the tray gently, when in the course of a few seconds the image will commence to appear. Carry the development on until the image is pretty well out. Remove the plate and wash well in a stream of running water. Then fix in a clean solution of hyposulphite of soda, of a strength of four ounces of hyposulphite to twenty ounces of water. When fixed the plate must be well washed for five minutes in running water, then placed in a bath of common alum, one ounce to twenty of water. About ten minutes will be the time for the plate to remain in this bath. Then remove it and wash well in running water for half an hour or more. When washed it should be very carefully wiped over the surface with a tuft of absorbent cotton while a stream of water is running over it, so as to remove any pieces of dust that may have settled during the previous operations. The plate may now be whitened, or allowed to remain until dry. These images must not be pushed in development like a negative, because the shadows must be clear and clean, in fact almost bare glass.

The whitening process is carried out as follows: pour into a clean tray as much of the whitening solution as will cover the plate well, then tilt the tray, so as to bring the liquid well down to the bottom edge. Place in the plate, then with one sweep allow the liquid to pass evenly and quickly over the surface. Keep the tray moving, when in the course of about twenty seconds it will be observed that the image stands out in fine contrast, especially if the tray used is one of

hard rubber or other black composition.

As soon as this stage is reached, remove the plate, wash well, and allow it to dry spontaneously away from dust. It may now be backed up with a piece of black velvet or black varnish and fitted into a frame, or mounted like a transparency with an intervening mat, and bound at the edges with strips of green paper. By this method of making the picture the position of the image is reversed, if viewed from the face of the plate, but this is easily remedied by simply reversing the plate when fitting it in the plate-holder. The difference in the thickness of the glass may be easily corrected when focussing the object. The resulting picture can then be backed up with a dead-black varnish upon the face of the plate. The figure will then present itself in the correct position.

The ferrous-oxalate developer will not keep in good condition long after it is mixed and should be made up fresh for each day's use. About which photographers would do well to ponder. Why is it that a photograph or print, which at first struck you as possessing considerable merit, does not continue to yield a feast to the eye? The pose and expression are good, the manipulation is in all points satisfactory, and yet you soon grow tired of it. Is it that the subject is uninteresting? By no means. The idea is as happy in its conception as in execution. Why,

developer for the ollows: take of A of C three or four above described the plate-holder, ur the developer Rock the tray few seconds the ear. Carry the s pretty well out. ll in a stream of lean solution of :h of four ounces nces of water. vell washed for oen placed in a e to twenty of e the time for l'hen remove it r half an hour be very carea tuft of abter is running of dust that is operations rallowed to

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then, does it not continue to give satisfaction to the mind? Just because it lacks that charm which harmony of light and shade produces. What is harmony of light and shade? Of sound and color—you can understand that term; but of mere light and shade—what does it mean? The term as applied to sound means concord, agreement; and why should this not apply to a scale of shades, from the faintest to the deepest, and their blending together so as not to irritate the sensitive eye? Yet, it is not, after all, a mere harmonious scale of sounds which gives pleasure to the ear, but the skilful use of these sounds, contrasting, blending, repeating; so with the scale of shades in a picture, they must be worked into a tune, and the more skill and "feeling" exercised in doing this, the more lasting will be the pleasure excited.

What we want, then, in the first place, is a highly cultivated as well as natural perception of this kind of beauty. And, in the second place, we want the means at our disposal for thoroughly carrying out our conceptions of it. It is to assist in the accomplishment of the latter that the eight plates may be developed in the same solution if used in the course of an hour or two.

The No. 2 developer may be used quite a number of times over, but when used it should not be returned to the original bottle but poured into another one, and kept on hand for future use. The No. 2 metol-hydroquinone developer should be used as follows: for a 5 x 7 plate take, four ounces of developer, add thereto four or five drops of the bromide of potassium solution, and then proceed to develop as in the case of ferrous oxalate. The fixing of the image may be carried out exactly the same as for the oxalate-developed plate. It is very important that the hyposulphite should be thoroughly eliminated from the gelatin film before applying the whitening solution. The backing up of the plate with a suitable black varnish is also important if the best results are desired.

A good dead-black varnish may be made by mixing one ounce of lampblack with five ounces of wood alcohol. Then add two ounces of shellac varnish and a teaspoonful of Venice turpentine. The addition of the Venice turpentine gives a pliability to the varnish and prevents cracking. This varnish must be mixed at least six hours before using, to allow the occluded air to pass out of the mixture, otherwise the surface of the varnish will become pitted. If the varnish is made overnight, it may be relied upon for use the next day. As a rule the above proportions will give a varnish with plenty of body, which will be found to be the right material for the backing up of the gelatin positives upon the film itself. Should the varnish be too thick it will only be necessary to add a small quantity of wood alcohol to bring it to the right consistency.

Asphalt varnish can be used upon the glass side only, but in this case the color is a brownblack, while the lampblack varnish gives a jet black without fear of staining the film. The lampblack varnish may also be used for producing a dead-black coating for the interior of cameras, plate-holders and the front boards of cameras, and can be relied upon at the same time as a water-proof coating.

Silhouette Portraits in Bas-Relief

A PHENOMENON which at one time or another must have attracted the notice of most photographers of any experience is that the image on a negative, while the plate is still wet, stands out in relief. Many will have thought it would be interesting to be able to make a portrait in which the head should appear very much as it does on a coin. It is not practicable to show details in relief as they are shown in sculpture; but if we are content to use silhouettes we may get a relief by means of pure photography.

The method which is described below is one of the many processes which rely on chromated gelatin. Such gelatin when exposed to light loses its power of absorbing water, so that a film of it soaked in water swells up where the light has not acted, while it remains unswollen, or at least only slightly swollen, where there has been light action. While it is in this condition, a plaster cast or an electrotype in copper may be made from it, and so a permanent record, or any number of permanent records, can be kept.

There are several methods by which silhouettes can be obtained. We have found the most convenient to be by posing the sitter in front of a stretched sheet. Behind this sheet, so placed that the sitter, or some opaque screen, intervenes between it and the lens, is burned some magnesium ribbon. The exposure should be a full one, the plate being backed: and it should be fully developed. If ample contrast is not obtained by development alone, the negative may be given a very brief reduction in a fairly strong ferricyanide and hypo reducer, and then after a thorough washing may be intensified either with mercury or with silver intensifier.

If such a negative is printed direct on to the gelatin, it is evident that the raised parts of the gelatin will represent the background, and the figure itself will be depressed. A cast in plaster-of-Paris will reverse this: but it is better to make the print from a positive and not from a negative, so that the cast in plaster becomes the matrix from which any number of other copies may be cast by a repetition of the process. Accordingly, when the negative is made, a transparency is made from it, aiming at the same qualities of opacity and clearness as in making the negative

A plain solution of gelatin poured on a suitable surface and sensitized will give some relief; but where, as in this case, as much relief as possible is required, it is well to add gum arabic to the gelatin, as well as a trace of acetic acid. Accordingly an ounce of gum arabic is soaked in four ounces of cold water for a day or two until it is quite dissolved. The solution should be strained, as the gum often contains solid impurities. Two ounces of ordinary white gelatin are then soaked in six ounces of cold water, and when quite soft are dissolved by standing the vessel in hot water. When liquid, the gum solution is stirred in, fifty minims of acetic acid are added, and the liquid is strained through muslin into a bottle. It will keep for a considerable time if it is not melted and remelted, a little of the stiff jelly being taken out with a spoon and liquefied when required for use. (The formulæ given are those which were

put forward by Prof. Namias a good many years ago as giving the greatest relief, while at

the same time working easily.)

A glass plate of suitable size must be cleaned and supported on a table and carefully levelled. If it rests on three little wooden wedges the levelling is easily done. It should be made just warm to the hand, and a pool of the melted gelatin poured on to it and guided all over with a glass rod. A very liberal coating should be given, but not enough to cause any to flow off the plate. In a few minutes the gelatin will have set into a jelly again, and the plate may be put aside to dry where dust has no access to it. A number of such plates may be prepared at a time, as they keep indefinitely.

A day or two before printing, the gelatinized plate must be sensitized. This is done by immersing it in a dish for at least ten minutes, after which it is stood up to dry in the dark. Until which it is stood up to dry in the dark. it begins to dry it is insensitive, so that all the operations up to this stage may be carried out in broad daylight. The sensitizing solution consists of three hundred grains of ammonium bichromate in a pint of water. This gives an orange-colored solution, to which strong ammonia should be added, a few drops at a time, until, after stirring, the liquid remains a lemon yellow instead of its original orange. A slight excess of ammonia does no harm; but the addition should be made gradually to avoid a great excess. One way of avoiding this is to divide the bichromate solution into two equal parts, and add the ammonia to one part first. If too much is added, it can then be remedied by pouring in some of the other portion of the solution. This sensitizer may be used over and over again.

Unless the sensitized plates are dried fairly rapidly the film will deteriorate, but it is not easy to dry a thick coating of gelatin quickly and in The film is too thick to dry in any the dark. ordinary darkened room in a night, and, of course, heat must not be used. If the photographer has been a platinotype worker and has an empty storage tube with a good supply of dry calcium chloride, two or three small plates will dry in that in a day or two. The writer has dried plates successfully by placing them at night in a warm room and in the morning shutting them up in a well-dried cardboard box, putting them out again in the evening. The second night will generally finish the drying. The sooner they are

exposed when dry the better.

As the film has a decided thickness the printing should be done in as direct a light as possible to ensure a sharp result. An ordinary printing frame will serve, and the progress of the printing can be noted from the back, as a visible image is formed. It should show strongly at the back of the glass, which it will do in from half an hour to an hour if the printing frame is put in direct

sunshine.

To render the image visible in relief the plate is placed in a dish containing a solution of two hundred grains of alum in one pint of hot water. When the solution is cold one dram of glacial acetic acid is added, and it is ready for use. Six to twelve hours' soaking is necessary at this time of the year to secure the full relief, the soaking being continued until it is evident that there is no further increase. When this stage is reached the plate is rinsed in plain water for a minute or two, put up to get surface dry, and is then ready

for the cast to be made.

To prevent plaster of Paris from adhering to a mould it is usual to employ a little oil or a solution of wax; but the moist gelatin relief is repellent of oil, so that some other substance is preferable. Ordinary block-lead answers quite well, and the surface of the gelatin may be brushed over with a little black-lead mixed with water to a thin cream. Very little is necessary, and as soon as the coating is surface dry it is ready for the plaster.

A good quality of plaster is necessary if the work is on a small scale, or the finer details of the silhouette will be lost. That which is sold at oilshops is often coarser than the best; but sealed bags of a finer kind are sometimes kept in stock, or can be obtained from regular modellers. in plaster, or from dealers in electrotype supplies. The plaster should be kept in a dry place, protected as much as possible from the air.

The glass plate for moulding should form the bottom of a shallow box, which can be arranged by providing it with card or paper edges attached to the glass side and turned up for about a quarter of an inch all round. Two or three tablespoonfuls of the plaster having been mixed up quickly with a little water into a smooth thin cream, this is poured in at one corner of the box and allowed to flow uninterruptedly over the whole relief until the box is full. It is left quite undisturbed for an hour or two, and then, the paper edging being peeled off, it may be detached from the gelatin relief, and put aside to get thoroughly dry and hard. When it is dry, it is brushed over with a solution of wax in benzol, and is then itself made the bottom of a shallow box, in which the plaster is poured, and in this way any number of replicas can be obtained. If a coating of graphite is given to the plaster mould, copper can be deposited electrolytically upon it, and metal copies may be made.

The success of this process depends very largely upon the selection of suitable subjects for it. There is no need to limit oneself to a portrait head: a full length figure or even two or more figures may be arranged so as to give a good silhouette. If preferred, the negatives may be made in the ordinary way, being kept very thin indeed, and then blocked out by hand; but this is not likely to give as good, true, and delicate an outline apart from any question of pure photography. As an interesting departure from the usual thing, well within the scope of the amateur photographer who has got beyond the elementary stages of the work, bas-relief portraiture in silhouette may be recommended. It is probable that results obtained in this way from suitable subjects would be welcomed at the more important exhibitions.—Photography.

Flashlight Powders

THE chief two kinds of flashlight powders are pure magnesium powder and mixtures of magnesium and other substances. Magnesium powder used alone is blown through a flame, the



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brightness and duration of the flash depending upon the quantity of powder burnt and upon the length of time taken in passing it through the flame. Some arrangements for firing permit of a slow passage of the powder through the flame, in which case the light is continuous, and not an instantaneous flash; others permit of a large quantity of the powder being passed through a flame very quickly, in which case there is frequently a risk of much of the powder being wasted.

Flashlight mixtures are explosive, and in their action behave like gunpowder; they must not be blown through a flame, but must be placed in a heap or a ridge and the light applied, the result being a momentary flash of high actinic power. Such explosive mixtures must always be looked upon as being more or less dangerous. The addition of chemicals to the magnesium is for the purpose of increasing the rapidity of the combustion and the actinic power of the light. When such mixtures are made by the worker, the ingredients should be purchased in the powder form and then mixed carefully together on paper with a dry feather. Large quantities should never be mixed for fear of explosions, and for the same reason there should be no lumps of any kind in the mixtures. The ordinary photographer will be well advised in buying his flashlight mixtures ready prepared.

Some of the best-known formulæ are:

No. 1 Magnesium Potassium chlorate .		:	6 parts 9 parts
No. 2 Magnesium Potassium chlorate . Potassium perchlorate		:	6 parts 4½ parts 4½ parts
No. 3 Magnesium Potassium chlorate . Antimony sulphide .			6 parts 12 parts 2 parts
No. 4 Magnesium Potassium perchlorate Potassium nitrate .	:		16 parts 12 parts 12 parts
No. 5 Magnesium Ammonium nitrate . Strontium oxalate . Sodium oxalate			48 parts 3 parts 5 parts 5 parts
No. 6 Magnesium Potassium perchlorate Sodium chloride (salt) Barium tartrate			40 parts 60 parts 5 parts 7 parts

Nos. 1 and 2 are good average mixtures for home work or professional portraiture. No. 3 gives a very good light, but its fumes are poisonous, and it should therefore be used in the open air or in a well-ventilated room where the fumes can escape quickly. No. 4 burns rapidly, and is less liable to explode. No. 5 is for isochromatic

plates, and a yellow screen should be used in the lens. No. 6 is for isochromatic plates, but a yellow screen need not be used.

Aluminum is said to give less smoke than magnesium, but it yields only about two-thirds of the actinic light. The following mixture of aluminum and magnesium not only gives less smoke than a mixture containing chlorate, but the smoke quickly passes away and the powder is non-explosive:

Copper sulphate (anhydrous	3)	6 parts
Magnesium powder .		3 parts
Aluminum powder		1 part

This gives much less smoke than mixtures containing chlorate, and the smoke passes away quickly, thus allowing of a series of successive exposures in a room.

There are many other formulæ for flashlight mixtures, but they are similar to the above.

Great care is necessary when firing flashlight mixtures; and when no proper lamp is used the powder is best placed on a small iron slab or tray and fired by means of touch-paper or by means of a long taper or a match fixed to a stick, the operator turning his head away when the actual flash takes place.

Slow-burning mixtures may be made, the following being a typical formula:

Magnesium powder		100 parts
Ceric nitrate		70 parts
Stronium carbonate		30 parts

Eighty grains of this powder burn in about six seconds.

Flash-sheets are made by soaking thin blotting paper in a strong solution of saltpeter, drying, and then spreading over the paper pure dried unoxidized magnesium powder, leaving the edges

Such a sheet constitutes a combined slow-match and flashlight, it burning slowly until the smolder reaches the powder, which then bursts into a bright flame. Flash-sheets are quite safe in use; a commercial form is a mixture of fine magnesium powder and celluloid spread on glass and allowed to dry.—Professional Photography.

Troubles in Winter Work

Those workers who are now experiencing the troubles which arise from low temperature of their developing solutions will be interested in the following suggestions: An ordinary brick when heated retains the heat for a long time, and this valuable property can be utilized in order to maintain the working solutions at normal temperature during the cold of the winter months. A couple of bricks heated in the domestic oven, and wrapped in a piece of old flannel, serve admirably as a stand for the dishes, and will keep the solutions warm during an evening's work. This arrangement is altogether more convenient than the hot-water bottle sometimes suggested for the purpose.—Amateur Photographer.

Polassium ferricyanide and red prussiate of potash are the same thing. The pure should be clear ruby crystals. Both crystals and solution should be kept in the dark.

What Can be Done with a Spoiled Negative?

WHAT can be done with a spoiled negative, and what is a spoiled negative? Expert photographers can generally get a picture out of the most hopeless kind of negative; indeed, it is sometimes necessary, in such cases, for example, as press photography, when under the most adverse conditions, with poor light, and perhaps rain or fog as well, a photograph of some important event or person has to be obtained. It is wonderful what good results can be obtained by those who know how to deal with poor negatives, and it is very rarely with skilful workers that a negative is ever given up as hopeless or "spoiled."

There are, of course, many instances where it is obviously useless to try to save a negative. If the plate has been badly light-fogged, or a serious mistake has been made in the developer, or if on continued development any sign of the image refuses to make its appearance, these are occasions when it is useless to attempt to struggle with the plate. But even then it has uses, $3\frac{1}{4}$ x 41 plates, for example, will answer, if cut to 3½ x 4, for lantern cover-glasses; the film has merely to be washed off with hot water, and when several such glasses have been collected, any painter or glazier will cut them to size at a trifling

But let us see in what way we can best prevent the negative from becoming "spoiled." We must try to be prepared for any emergency in development, and to think out a method of instantly battling with any trouble which crops up. The following little table may help materially in doing this, and should be remembered carefully by those whose practical experience is not as yet large.

1. The plate appears to be foggy. Add some 10 per cent. potassium bromide solution to the developer, and then, if necessary, add some water. The latter will slow development, but will counteract the tendency to harshness caused by

the bromide.

2. The image flashes up quickly, and the picture appears to have no density. At once pour off the developer, rinse the plate, and then cover it with A solution, i. e., developer without accelerator. Meantime prepare a fresh mixture of two or three parts of A to one of B, plus plenty of bromide, and then start again. The plate may have to be treated subsequently.

3. No patience or forcing seems to bring up any signs of the image. Here it will be worth while to dilute the developer with about three times its volume of water, and to let the plate "soak" for an hour, or even longer.

Negatives which are too bad to be of any use for printing, even by modified methods, should always be kept, thoroughly washed, and dried in the usual way first, for experimental purposes. If you are trying a new method of intensification, a new toner for lantern slides, or if you are making your first attempt at retouching, spotting, varnishing, and so forth, an old negative should always be used first, as all these operations are difficult and uncertain until a little experience has been gained.

And lastly, in order to avoid the disappointment of seeing a really good negative become "spoiled," take care to wash, as well as to fix, it thoroughly in the first instance.—T. THORNE BAKER in Focus.

How to Acid-proof the Photographic Bench

THE ardent experimentalist in photography often finds that his photographic bench is being steadily ruined by strong acids or stained by chemical dyes. As every photographer likes to see his bench clean and well-ordered, he finds that it is worth his while to acid-proof it on some spare evening. It is certainly wise to adopt this precaution in regard to a new bench. If the table to be acid-proofed is one which has been filled, oiled and varnished in the usual way, the first step is to scrape off the varnish down to the wood. Now make up this solution:

Potassium chlorate		1 part
Copper sulphate		1 part
Water		8 parts

Place the two salts in water and boil until they totally dissolve. Now apply two coats of this solution while hot, waiting until the first coat is dry before applying the second. The following solution must then be prepared:

Aniline					6 parts
Hydroch!	loric	aci	id		9 parts
Water .					50 parts

Apply two coats of this solution and allow the wood to dry thoroughly. After this apply a coat of raw linseed oil, a cloth being used in preference to a brush, so as to obtain a thinner layer of the

It is claimed that the resistance of the wood to the action of strong acids and alkalies is increased by the use of the following solution:

Copper sulphate	4 parts
Iron sulphate	4 parts
Potassium permanganate	8 parts
Water, q. s	100 parts

Make up this solution and apply as before, but this time clean off the excess of the solution, which has dried upon the surface of the bench. Now apply the second solution:

Aniline hydrochlorate . . Water, q. s. . 100 parts

Some hours will elapse before the ebony-black color appears. After a few applications of the linseed oil, which may advantageously be diluted with turpentine, the wood takes on a dull polish. When a course of work has been finished, the table surface may be easily cleaned by washing with water; if another application of oil be brushed over, it will put the table in excellent readiness for more experimenting. The photog-rapher should do this at certain fixed times. Strong acids or alkalies should be wiped off as soon as spilt, when no perceptible marking can be detected.—Amateur Photographer.

Coloring Prints and Lantern Slides with Dyes

In American dyes are put up in various handy forms, the Velox Transparent Stamps, Aristotints, etc., as water colors, and for those who con-



ash, as well as to fix nstance.—T. Thorn

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demn dyes it may be just as well to remind them that Azo and Alizarin Coal Tar dyes are sold in this country as water colors. Prejudice will disappear if artists approach the subject not as one of painting, but rather of the art of staining, with its special advantage for the after processes of glazing, celluloid-facing and polishing photographs. Again, artists should look upon it as a conventional transparent method, keeping within its limits just as pastel is an opaque medium, also conventional, because oil colors provide the only means of a wide range of transparent and

The War Photographs now on exhibition are a revelation to many artists in the skilful use of transparent color, opaque touches of any kind being wisely avoided. Those who have seen them will have received a valuable lesson how photographs should be treated, and not made to appear what they are not at the expense of detail.

opaque elements with the strength to match

For those who would like to try their hand, dyes are the cheapest and simplest of all colors to use; no preparation necessary. Photographs for treatment should not be deeply printed or given too warm a tone. They are generally colored flat on a table, at times held in the hand, enabling the washes to run either up or down the print. Hitherto apparently most, if not all, of these dyes were of non-British make, but, as already said, British makers have lately produced dyes which in color and solubility are most excellently adapted for photographic purposes. Few photographers will need to buy in the pound quantities as sold by manufacturers, but they can conveniently test the new products by taking advantage of the set of packets sold ready for dissolving by Mr. Godbold, of Brockley. have tried these with great satisfaction, and the following notes apply to them.

The set consists of:

Black Blue Crimson Scarlet Yellow Brown

Unfortunately, the code letters, numbers, and chemical names give no indication of their color, but the six colors required should be selected as near as possible to blue-black, cyanine-blue, carmine, scarlet-lake, aureolin, and raw sienna or raw umber.

Other colors are got by mixing, as follows: Nos. 2 and 3 purple, 2 and 4 lavender, 2 and 5

green, 4 and 5 orange, 1 and 4 brown, 1 and 6 olive.

Any color can be produced, the exact tint depending upon the proportion of the two colors. For instance, a variety of browns can be made by combining green and orange for bright browns; orange and purple for warm browns; green and purple for olive browns. With these hints the mixing of tints are best acquired by a few experimental trials.

Nos. 1 to 6 diluted make blue-gray, sky-blue, pink, flesh, and straw tints.

Flesh tints are best made up to suit the subject, as pinky (4), sallow (4 and 5), florid (3 and 6).

If the print is a light one, say a vignetted head then black is very useful in toning the colors and for tints, as 1 and 3 neutral gray, 1 and 6 green gray for backgrounds.

The advantage of dyes are especially manifest in small work (postcards and miniatures), their wonderful transparency allowing fine details to show through, whereas some water and oil colors are body colors which hide the details.

For P. O. P. and bromide, damp the photo-

graph all over to enable the first wash to run evenly. For glossy collodion paper rub over with

strong gum, and color into that.

The secret of success in using dyes is to use them weakly, building up the color required by repeated washes. Use blotting paper if you wish to prevent the dyes acting too quickly; it also obliges the worker to proceed slowly. Give the necessary time; the cost is a fraction of a penny. Should the work affect the gloss when finished polish with a solution of wax in turpentine.

It has been suggested that the scheme of coloring peculiar to Watteau offers advantages for study by the photographic colorist because of its

delicacy and freshness of tints.

Dyes are the simplest means of coloring lantern slides (considerable skill is required to use transparent varnish colors), but the work is best done near a tap, as they require to be repeatedly rinsed unless the dyes are applied sufficiently weak and built up carefully. Slides are best held in the hand over white paper. A retouching desk is useful, but as one is always turning the transparency about to guide the running of the washes, it can be dispensed with. Use artificial light, as slides colored by daylight are apt to be disappointing when thrown on the screen. Here again the use of black, judiciously employed, will give variety to colors and save crudeness of color-Blotting paper should not be used.

Attention is called to the hint in the B. J. A. of the use of yellow or orange dye as a convenient blocking out medium when printing on develop-ment papers: it is so easy to use owing to its transparency. First go over the film with oxgall on wet cotton wool; the dye then diffuses slightly beyond the edge of the brush work and avoids harsh lines. Amateurs will find this tip particularly useful in preventing, say, a curtain and foliage background being too evident. Just a pale wash will often improve a negative, enabling dark hair to tell a shade darker than the shadow of the curtain or foliage.—BURLINGTON in British Journal of Photography.

The Iodine Spirit Reducer

ADDITIONAL experience with the alcoholic solution of iodine and cyanide has not led to any modification in the original formula; but a few points have arisen in practice which it may be well to refer to and elucidate as far as possible.

In the first place, the alcoholic solution is designed for local work on the dry print, and is not in any sense intended to replace the watery solution of iodine and cyanide as a general

Three stock solutions are required, viz.:

(a) Tincture of iodine of the Pharmacopæia.

(b) Potassium cyanide, 25 grains; water, 1 dram; rectified spirit of wine, 3 drams.

The cyanide is rubbed in the water until it dissolves and then the spirit added. Any sediment should be allowed to remain in the bottle, the supernatant liquid being used. The solution is

very poisonous.

(c) Strong solution of ammonia, sp. gr. .880. The stock solutions keep well in stoppered bottles.

The working mixture consists of 10 minims of (a), 30 minims of (b), and 1 to 2 minims of (c).

The function of the ammonia here is to prevent the formation of the blue iodide of starch, which, of course, would completely hide the action of the reducer. Only sufficient ammonia should be added for this purpose, as excess has a softening action on gelatin surfaces. In fact, when the degree of reduction required is small it may be possible to dispense with the ammonia altogether if necessary, as the blue coloration is not formed unless the action of the reducer is prolonged.

The mixed solution is colorless when fresh, but

The mixed solution is colorless when fresh, but gradually turns yellow, and loses its full activity. Nevertheless it should not be thrown away, as solution which is some months old is very useful for delicate work, for which fresh solution would be too active unless specially diluted with spirit.

The solution is destructive of brushes. They become twisted and curled and eaten away in time. For fine work, however, I use small camelhair pencils, costing five cents, which last a considerable time if kept constantly rinsed in spirit when not actually in use. For larger work we may use the tip of a piece of firm, well-made twine drawn through a glass tube of suitable diameter; and for still larger work a strip of washleather, passed through a tube and cut with

scissors to a point, may be used.

The reducer should never be allowed to dry up on the print. Each application should be followed in a few seconds with a wash of plain methylated spirit. If one application of reducer is not sufficient it may be repeated. The spirit for washing off the reducer may be most conveniently applied with a soft camel-hair brush, and should be allowed to rest a moment on the surface of the print before it is wiped off with a cloth. This gives it time to absorb the water in the reducer, which is a particular advantage in the case of papers the gelatin surface of which is very soft and which have not been put through an alum bath. Such surfaces when moist may be very tender, especially in warm weather. This applies particularly to certain makes of semiglossy and glossy papers.

Ordinarily there is no stain, but if the solution is allowed to dry up in the print, a brown stain due to iodine will be produced. This may be removed instantly by the application of solution

of sodium sulphite or of hypo.

A blue stain is due to the combination of free iodine with starch in the paper, and is prevented by the ammonia, as previously stated. Any stain or yellowness of the paper, however, yields instantly to sodium sulphite, and the paper is left, if anything, whiter than it was originally.

If the reduction required has been slight, and the part has been well flooded with spirit subsequently, there does not appear to be any necessity for fixing and washing. If, however, a considerable depth of silver deposit has had to be removed, a final fixing and washing should not be omitted; as not only is there risk of iodine stain due to the drying up of any reducer left in the print, but any

silver salts left in the print would show in time, as the print was exposed to light. The hypo does away with either of these risks.

The solution may be used with equal facility on prints which have been sulphide-toned; but there is always a tendency for the reduced part to be of a yellower shade than the original. This is inherent in any process of local reduction of a sulphide-toned print, and is more or less noticeable according to the particular shade of sepia of the original. If the print is rebleached and again sulphided, the reduced part still shows the same difference in tone.

The remedy is simply to go over the part with a wash of suitable pigment to bring it into harmony with the rest of the print. I have found a mixture of Winsor and Newton's powder Indian red, together with Prussian blue in powder form and methylated spirit, answers perfectly; it is

surprising how very little suffices.

The wash is applied with a camel-hair brush, and the excess removed by dabbing or wiping off with a cloth, the wash being repeated if

necessary.

If it is not imperative to retain the sepia color, the inequality of shade may be got rid of by rebleaching the print, and then redeveloping to black. A particularly fine rich black is obtained in this way; and the print will be considerably stronger than the original bromide, so that this treatment is most suitable for weak prints.

The best bleacher is permanganate \(\frac{1}{2} \) grain to the ounce, acidified with hydrochloric acid about 10 minims, or with a mixture of salt (10 grains) and sulphuric acid (2\(\frac{1}{2} \) minims). After bleaching, it is best to clear away any permanganate stain, by using a bath consisting of 5 grains of sodium sulphite to the ounce of water, acidified with 5 minims of hydrochloric acid. A short wash and, after exposure to actinic light (unless the operation has been conducted in actinic light), the print may be redeveloped. As redeveloper I use amidol without bromide. A little sodium carbonate may be added to the amidol developer. No fixing is required.

Although my chief use of the reducer has been in touching up faces on the prints in outdoor portraiture and figure work, I have occasionally used it on negatives, in order to bring down an over-dense sky to printing density quickly without wetting the negative; and I consider that this reducer should completely supplant mechanical methods of reduction, such as friction with methylated spirit and the use of abrasive mix-

tures containing metal polish.

Not only does the chemical reduction take place more evenly over a given area; but, with the chemical reducer, any buried detail will tend to be brought out, and the part reduced will be more in harmony, as regards textures, than is the case when the reduction is effected by rubbing down. In the case of negatives, the reducer may be applied with a wad of cotton, taking care not to injure the film; and the washing off can be done by dipping the whole negative in spirit. Or the spirit for washing off may be applied very gently with a larger wad of cotton. The negative will be dry again very quickly.—T. H. GREENALL in Amaleur Pholographer.

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Solution Making

Solution is a process which is very largely employed in photography, since it is by means of it that one chemical is enabled to act upon another. By separating the molecules of a substance, as is done when it dissolves, it is brought into a condition in which the decomposition and recomposition, which such processes amount to, can take place. It is therefore well for the photographer to know something about the conditions under which solution can be effected.

These differ very considerably in different cases. The solution of hypo in water, for example, is so different from the solution of silver bromide in hypo which takes place when we fix a negative, that attempts have been made to use two different terms for the processes. When hypo is dissolved in water, the particles of hypo are dispersed throughout the liquid; but they remain hypo, and if the solution is allowed to evaporate, the water passes off, leaving the hypo once more in its original condition. But when the silver bromide is dissolved in a solution of hypo, or when a piece of metal is dissolved in acid, the solution no longer contains the substance that existed before it was dissolved. Its elements are there, but they are regrouped. On evaporating the fixing bath we do not get silver bromide, nor on evaporating the solution of metal do we get the metal. We get in the one case combinations of silver, sulphur, sodium, and oxygen, together with sodium bromide, and in the other we get what is called a salt of the metal and acid.

Various Solvents Used

When making a solution for subsequent use as such, water is almost always the solvent which is employed in photography. The only exceptions that need be named are in making varnishes and certain dye solutions, in which alcohol, ether, amyl acetate, etc., are used: but such exceptions themselves lie outside the sphere of everyday photographic work; and we may therefore deal, at present, only with solutions in water. When the solubility of a substance is referred to, without qualification, its solubility in water is always understood.

There are great variations in the extent to which different substances will dissolve in water. Some are only slightly soluble; as, for example, mercuric chloride, which at ordinary temperatures requires sixteen times its weight of water to dissolve it. Sodium carbonate, on the other hand, will dissolve in twice its weight. Then, again, temperature introduces other variations. Boiling water will dissolve no more common salt than cold water will dissolve: whereas boiling water will dissolve more than five times as much as cold water in the case of mercuric chloride. And there are much wider variations than these.

It will be gathered from the preceding sentence that there are limitations to the quantity of a substance which can be dissolved in a given quantity of water. When the water has dissolved as much as it will take up, the solution is said to be "saturated." If by heating the water we can make it dissolve more, it will be found that, as the solution cools again, this extra quantity passes out of solution once more. Most photog-

raphers have seen examples of this, when the bottles containing some of their developing solutions have been allowed to get extremely cold in winter; crystals collect at the bottom of the bottle, which can only be redissolved by warming and shaking the solution. As most of the chemicals used in photography are much more soluble in warm than in cold water, it is best, generally speaking, not to keep them in the form of "saturated solutions" on this account; but to have the solution so far weaker than the point of saturation, that there need be no fear of crystallization taking place when the cold weather comes on.

The Use of Heat

Advantage is often taken of the greater solubility of substances in hot water, to use it when making up solutions, in order to save time; and, in most cases, there is no reason why it should not be done. It must be avoided when there is a likelihood of the heat decomposing the substance to be dissolved. Chrome alum, for instance, should not be dissolved in boiling water. Potassium metabisulphite loses some of its sulphurous acid when hot water is used to dissolve it, as the smell indicates plainly enough; but what is left does not differ substantially in character from the result of solution in cold water, except that it is weaker. So that in that case, while hot water should not be used, no great harm is done.

To make a solution quickly, it is important to bring the substance into as close a contact with the water as possible. A substance in fine powder dissolves more quickly, therefore, than the same substance in a coarse powder; and the coarse powder dissolves more quickly than big crystals. Consequently when we are in a hurry, time may be saved by crushing any large crystals as circumstances will permit. The proper utensil for the purpose is a pestle and mortar, which may be of Wedgwood ware or of glass; but in photography we can make shift without this. The crystals may be wrapped in two or three thicknesses of clean paper, and smashed with a hammer, or by rolling with something hard.

As some of a substance dissolves in water, the solution becomes less effective as a solvent of what is left. If some crystals are placed at the bottom of a bottle and left quite undisturbed in cold water, it may be a very long time before they dissolve. The reason for this is that the solution itself is heavier than plain water, and therefore remains at the bottom; so that the crystals are soon lying in a strong solution of the substance and dissolve only slowly. In time they will all dissolve, if there is enough water present, as gentle currents are set up, and the solution gradually diffuses into the water above it. But this is the slowest way of making up a solution.

Solution from the Surface

We can hurry up matters by shaking the liquid or by stirring it, so as continually to dilute the solution formed with the plain water. Another good plan to secure rapid solution with a minimum of trouble is to hang the substance to be dissolved just below the surface of the water. A muslin bag answers very well for the purpose. As soon as any of the substance dissolves, the

weight of the solution causes it to sink through the water, and its place is taken by fresh water; and this circulation goes on without any need for shaking or stirring, until all is dissolved, or until the water can dissolve no more. The solution can be seen falling through the water, especially if the substance is a colored one, such as potassium bichromate; and a very good demonstra-tion is thus provided of the efficacy of the method.

Stirrers for solution should either be of earth-enware or glass. It is a bad plan to use wood for the purpose, as it may introduce impurities by means of its pores. Glass stirring rods with rounded ends can be bought from the dealers in chemists' supplies; but strips of glass, cut from old negatives, if washed quite clean, do almost as well. They call for a little more care, unless their sharp edges are ground off; because a scratch from such a point on the inside of a glass vessel is much more dangerous than one on the outside, and will often cause a quite substantial looking graduated measure to fall to pieces.

Before a photographic solution is used, it is most important to make quite sure that all the ingredients have dissolved. Black spots with tails, like the conventional rendering of a comet, are the result of using a developer in which there are undissolved particles. To prevent all risk of this, it is a good plan, if the solution is only made up immediately before use, to pass it through a funnel, into the neck of which a plug of absorbent cotton-wool has been placed. there should be any undissolved particles, this

will strain them out.

The ingredients of a solution can be put into the funnel on top of the wool, and the water poured on them, if the order in which they are to be dissolved will permit of it.

The Order to be Observed

This brings up another matter in connection with the making up of solutions used in photography, and that is the order in which the various substances are added. In a great many cases this is unimportant; but in some, it is essential that they shall be dissolved in a certain sequence. It has become a recognized thing now to enumerate the substances in a formula in the order in which they are to be dissolved, the water itself being specified at the finish, although, of course, it is taken first. If the photographer is not quite sure that order does not matter, he should therefore dissolve them in the order in which they are named, making sure that each is dissolved before the next is added.—Amateur Photographer.

Sepia Tones on Bromide Paper

THE demand for other tones in photographic pictures than the brown to which we have so long been accustomed, that in common parlance it has received the name of "photographic brown," is becoming more and more general. bromide papers certainly give a variety of other shades from gray to black. But these tones, especially for portraits, and studies, often seem to be too cold; a warmer tone is more desirable. Sepia-brown is the present favorite for this purpose, and it is beside a decidedly artistic tone. The method of obtaining these tones, says a

writer in Photo Chronik, is extremely simple, the necessary chemicals—alum and hypo-being always at hand. It is, of course, equally suitable for enlargements or for contact prints. It is only necessary, to obtain a good result, that the negative should be full of contrast. From a flat negative it is impossible to get a good sepia print. The reason for this is to be found partly in the color itself. The contrast between the lights and shadows of a picture is always less than with the black range of tones. The second reason why a negative rich in contrast is necessary, is that the print to be produced in sepia tones must be considerably over-exposed. The more exposure given the more will the picture assume a yellowishbrown, as with a shorter exposure the tones become darker; with normal or under-exposure the toning process becomes a failure. Moreover, not only over-exposure, but also over-development is necessary for the production of a beautiful sepia picture, and the degree of this overdevelopment must be regulated by the age of the toning-bath to be used. The most suitable developer is amidol:

Water			40 parts
Amidol			1 part
Sodium sulphite			10 parts

When possible, the use of potassium bromide should be avoided, or only a very limited quantity used when absolutely necessary. With other developers—e. g., metol, hydroquinone, and iron, such good results cannot be obtained. The prints must be fixed as usual, but the washing must be very slight. It is best if the toning can be done at once, but in case of need the prints may be allowed to dry and be toned later, without any real detriment to the resulting picture. toning-bath, as has already been said, is very simple and cheap. The alum and hypo should be disssolved in boiling water. The quantities are about as follows:

Water				50 parts
Hypo				15 parts
Alum				2 parts

but a strict adherence to this formula is by no means necessary. The solution presents a milky appearance, due to the presence of fine grains of sulphur, which are produced by the action of the alum on the hypo. For toning, the print must first be laid in the bath before it is warmed. In this way the film becomes hardened, which makes this way the nim becomes nationed, which is an important factor in the attainment of the bath is an important factor in the attainment of the tone; in a cold bath this is impossible. The toning in a cold bath this is impossible. The toning takes place very slowly. After half an hour it should be complete, and if the desired tone has not been obtained in that time it is useless to leave the print any longer in the bath; it is better to begin quite afresh. The reason for this non-success in toning is to be found in the fact that the above-mentioned instructions have not been carried out. An old bath gives a more chocolate tone, the prints do not retrograde so much, as is the case with a new bath, which gives yellow-brown tones. By the use of old and new baths mixed together as desired, it is possible to produce quite a series of tones. Thorough wash-ing is absolutely necessary. When the prints are spread out to dry they should be wiped over several times with a soft sponge to remove any adhering particles of sulphur, which would give a dusty appearance to the dry print.

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Artistic Prints on Ivory

Making photographs upon ivory does not appear to be thoroughly understood, and those who are masters in this class of work hold every little point as a secret.

The production of prints upon ivory can be carried out by two methods. One plan is to print the image directly upon the ivory; the other is carried out by making a specially coated paper with a collodion emulsion, then printing the image upon this paper, toning it and fixing it, then stripping the collodion film from the paper and transferring this to the ivory. The carbon process can also be used for this class of work. The present article will deal with the collodion process only, because when the collodion emulsion is once made up the after-work is so simple and certain that it will be impossible to fail in obtaining the best results in the hands of anyone who possesses only a small amount of knowledge in photographic manipulation. One point must be attended to in all the operations, and that is to see that every vessel and bottle used is perfectly clean, and not contaminated with any other chemical, especially the developing agents.

Preparation of the Collodion Emulsion

Take a twelve-ounce, clean, dry bottle with a good-fitting cork; place therein:

Pyroxylin (gun cotton) . . . 50 gr.
Alcohol (pure photographic) 4 fl. oz.
Sulphuric ether . . . 4 fl. oz.

Shake the bottle well until the pyroxylin has become completely dissolved. The following solutions must be made up and marked "Stock Solutions:"

No. 1

Nitrate of silver (pure) . 240 gr. Distilled water . . . 4 dr.

No. 2

Chloride of strontium . 64 gr. Alcohol (pure photographic) 2 fl. oz.

No. 3

Two ounces of the plain collodion must now be placed in a four-ounce amber-colored bottle, and 30 drops of No. 1 added to 1 dram of alcohol. Pour this into the collodion; shake this well and add 1 dram of No. 2, a few drops at a time; shake the mixture between each addition; add`lastly 30 drops of No. 3; shake this mixture well and allow to stand for half an hour. The emulsion must now be filtered through a tuft of absorbent cotton, pressed lightly into the neck of a small, clean, glass funnel. All these operations must be conducted under an orange-colored light, because the emulsion when made up is sensitive to the action of any white light. All the bottles

used must be amber colored, except that which contains the plain collodion, which may be of white glass. As soon as the emulsion has been filtered it is ready for use, and can be employed directly upon the ivory or the coating of the stripping paper.

Preparing the Stripping Paper

Procure a few feet of baryta coated paper, and float this upon a warm mixture of gelatin made as follows:

Gelatin			90 gr.
White granulated suga	ar		30 gr.
Water			6 oz.

When this is made up, filter it through three thicknesses of cheesecloth, tied over the top of an ordinary tumbler. Pour this into a clean tray; see that there are no air bubbles; then float the baryta paper face down upon the mixture; allow it to float until it lies quite flat; raise it by one corner; if there are any bubbles, they must be dispersed and the paper allowed to remain for a few seconds, so as to secure an even coating. It must now be lifted and suspended to dry in a warm room. Quite a number of pieces can be thus prepared and kept ready for use, as it will keep well for any length of time if kept dry and under pressure.

Coating the Paper

Take one of the dried sheets, turn the edges up all around for about a quarter of an inch, so as to form a tray; just tack the four corners down upon a piece of stiff cardboard with sealing wax. Pour upon the center a small pool of the filtered emulsion; allow it to run evenly over the surface; then drain the excess of emulsion into the funnel, so as to filter it again into the stock bottle; lift the coated paper, where it was fixed with the sealing wax, with the blade of a penknife, and suspend it to dry. Of course, all these operations must be conducted away from all white light. After the coating has become quite dry it must be coated again with the same emulsion, only the pouring off must be done from the opposite corner. This will give an even coating of sensitive material. As soon as this second coating has become dry the paper is ready for use.

Printing the Image

Cut the paper to the size required; place it upon the negative, say a small portrait; expose to light and print it about two shades darker than will be required for the finished picture. When printed the print must be washed in half a dozen changes of clean, cold water, then toned in the following gold bath:

Thie bath should be made up several hours before use. Place the washed print into this; watch the color; just as soon as there is a slight change in color the toning is complete. Place the print into cold water; wash twice; then fix in a solution of hyposulphite of soda, 3 ounces; water, 20 ounces.

Five minutes in this will be sufficient. Then wash the print well in running water for fifteen minutes. It may then be suspended to dry. When the drying is complete, the print must be cut to the size required, and then placed into a basin of water heated to about 150° F. In about one minute the collodion film will float off, or it may be assisted with a small sable brush.

The piece of ivory must be prepared by cleaning the surface with a tuft of absorbent cotton dipped into alcohol. As soon as the surface has been well cleaned, the ivory is dipped into the water and the film with the image is floated upon the ivory. It is then carefully spread into position by a small sable brush, and blotted off with a piece of clean white blotting board. The print and ivory are now to be placed between two fresh blotters, and put under pressure in an ordinary printing-frame for twenty-four hours, when the result will be a beautiful print upon ivory, fit for coloring, or allowed to remain as a perfect photographic print. There is just enough gelatin left upon the surface of the collodion film to enable it to adhere to the ivory.

Printing upon the ivory may be done direct by coating the ivory (after it has been cleaned with alcohol) with the sensitive emulsion, drying it, and printing in just the same way as ordinary printing paper, and toning in the same manner. The washing operation after fixing will require to be longer, so as to remove every trace of the chemical from the body of the ivory

chemical from the body of the ivory.

The sensitive emulsion will keep good for months, but the paper will not keep good for more than four days to a week, so that the paper must be prepared only a short time before required for use.

The time for fixing a print when made direct upon the ivory must be double that required for paper. This will insure every trace of the free nitrate of silver being eliminated from the pores of the ivory, and insuring the stability of the print.

Ivory in pieces of variable thicknesses can be procured of art dealers, and at some of the dealers in artists' materials, varying in price according to size. A piece about half an inch wide and two inches and a half long will cost fifty cents. This will be found large enough to make several small locket portraits upon, and, if printed light, will be found admirably suited for coloring.

The Ferricyanide Reducer

The above is one of the most useful chemical accessories that the photographer has. At the same time, while it is such a good servant, it is apt to become a dangerous master if its nature and its limitations are not clearly understood. By far the handiest and safest method of employing this reducer is not that in most general use, but now that the price of chemicals does not allow of wasteful habits, it may be as well to say that the best method in theory and in practice is also the most economical.

As regards the potassium ferricyanide, the strength to make the stock solution is immaterial, as in working one judges by the depth of color. An ounce in a pint of water is quite a useful strength to make, and is easy to remember.

The hypo solution should not be merely a little out of the fixing-bath. It is almost as bad to put a few crystals of hypo and of ferricyanide in some water and let them dissolve together, as many workers do. The proper way is to keep a special big bottle of hypo of a known strength, not less than four ounces to the pint. This should be kept filled up so that there is always hypo solution of normal temperature. Fresh-made hypo solution is usually cold, and calls for more ferricyanide than one would otherwise use. This results in uneven action over the plate, and a sudden jump when the stuff has begun to work, so that it is difficult to control.

The way to work to the best advantage is to take just enough of the hypo solution for the job in hand and not pour out a lot because it happens to be cheap. Then add just enough of the ferricyanide solution to turn it a lemon-yellow-that is, the depth of the rind of a lemon. Remember that it begins to go bad directly the two ingredients are mixed; so it is best to keep them apart till one is quite ready to use the reducer. For the same object, i. e., proper action of the chemicals, it is advisable to rinse the plates or prints, as the case may be, after fixing, so as to get rid of anything likely to contaminate the ferricyanide. Some people like to put plates, etc., back in the fixing-bath after reducing, and there is no harm in doing so, but also there is no need if a proper strength of hypo solution is used for the reducer. Another very necessary point to observe is to get the two solutions very thoroughly mixed before use. There is scarcely another process that will show up so unmistakably the unevenness caused by want of thorough mixing.

There are other unevennesses that this reducer will show up badly that are not the fault of anyone, but are inherent in photographic practice. It is advisable to have a knowledge of these, therefore, so that the danger of spoiling a passable plate in trying to improve it may be avoided. The action of the reducer is that it eats away the fainter parts of the image more rapidly in proportion than the denser, thus increasing contrast, not only between details, but also between various areas. Now many negatives that have been fully exposed and developed look pretty even in density all over, and will give an even print or enlargement, although actually they may be uneven either by reason of varying thickness of the emulsion, always present to some extent, or by the illumination of the lens being stronger in the center than at the edges. Most lenses show this, the worst being wide-angle lenses, and the very large-aperture variety do the same, while the most even negatives are from lenses of moderate or long focal length at the more central portion of their field. Anyhow, these defects are not noticed in normal cases because the difference in the densities due to the faults are small in comparison to the ordinary differences due to the subject. Directly one begins to reduce, however, owing to the "select-' action described, these variations begin to show up badly, and are always made much worse than they need be if the reducer is too strong in ferricyanide, or if it is used in some other of the faulty ways described.

Properly used, with judgment, the reducer will

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igle the om he w. improve many a faulty negative or print, either by local application with cotton-wool or all over by immersion. It will correct vignettes in bromide prints just as well as the iodine-cyanide; but it is not to be expected that it will reduce a black image to a light one without leaving a trace of color; nor that it will let a negative of great opacity down to normal density with as good a result as if the plate had been correctly exposed and developed in the first place.—British Journal of Photography.

The Strength and Use of Solutions

A SOLUTION, whether made by weight, by volume, or by weight and volume, may be described as containing either a certain percentage of the ingredient or as containing so many parts by weight or volume of the ingredient in so many parts by weight or volume of solution. The former is its percentage strength, the latter its rational strength. In practice we are compelled to use solutions of various odd and fractional strengths, but the "stock" solutions from which such "working" solutions are made up should always be of simple integral strength; for while it is always easy to make a solution of intricate strength from a stock solution of simple strength, the converse operation is likely to be very difficult. It is very important that stock solutions should be made of convenient strengths, and in the making of such solutions the following are very desirable principles to observe:

With metric standard measures, a stock solution should always be of integral percentage strength; its rational strength should be integral when the quantity of the principal ingredient is taken as a unit; therefore, all integers should be divisible into 100. This rule permits the use of the following stock solutions:

Perce	Percentage strength.		onal	strength.
1	per cent.	1	in	100
2	"	1	"	50
4	"	1	"	25
5	"	Ī	"	20
10	"	1	"	10
20	"	1	"	5
25	"	Ī	"	4
50	"	Ī	"	2
100	"	1	"	1

It prohibits solutions such as 3 per cent., or 1 in $3\frac{1}{3}$; 30 per cent., or 1 in $3\frac{1}{3}$; 40 per cent., or 1 in $2\frac{1}{2}$; but only as stock solutions. There is no objection to the employment of these strengths in "reserve" solutions from which the stock solutions can be replenished. If we use large quantities of any particuar stock solution it is convenient to keep, if possible, a reserve solution of, say, double or triple strength. Thus a 20 per cent. solution may be easily replenished from a double strength or 40 per cent. reserve solution; or from a triple strength, or 60 per cent. solution, if such can be made.

If the nominal units of the grain and minim are employed the rational strength of a stock solution should be integral when the quantity of the principal ingredient is taken as a unit, and all integers should be divisible into 60.

This rule permits the use of the following stock solutions:

Rational strength.			Grains per dram.	Grains per ounce.	Percentage.			
1	in	60	1	8	_			
1	"	30	2	16	_			
1	"	20	3	24	5 t	er cent.		
1	"	15	4	32	_ '			
ī	"	12	5	40	_			
1	"	10	6	48	10	"		
1	"	6	10	80	_			
1	"	5	12	96	20	"		
ī	"	4	15	120	25	"		
ī	"	3	20	160	_			
1	"	2	30	240	50	"		
ī	"	1	60	480	100	"		

All these solutions are convenient if we use them solely as solutions of rational strength, but if we wish also to use them as percentage solutions, then only those represented in the last column are adaptable. With the metric measures all solutions of convenient rational strength are also of convenient percentage strength, but this is not the case with English measures.

If English standard units are used, as there is only the one pair of units, it is inconvenient to consider the rational strength of a solution, excepting when the principal ingredient is required to be used by the ounce or the solution to be used by the pint. For example, a 10 per cent. standard solution of hypo may be conveniently considered to be of the rational strength of two ounces to the pint, but with small quantities of weak solutions we must keep to percentages. It it best, as a rule, to use standard solutions only with metric measures and to adopt only the nominal units of the grain and minim with English measures. The avoirdupois ounce may, in fact, be dropped altogether in considering the use of solutions, though it is at times useful in making up stock solutions in large quantities, either for use with the metric units or with the English nominal units. In the former case we simply use the avoirdupois and fluidounce in place of the gram and cubic centimeter. In the latter case we can work by the following table of equivalents, which gives in avoirdupois and fluidounces a series of stock solutions of convenient rational strengths by nominal weight and volume:

Rational strength.	One oz. avoir. in water to make						
1 in 60	54	oz.	5	dr.	30	minims	
1 " 30	27	"	2	"	45	66	
1 " 20	18	"	1	"	50	"	
1 " 15	13	"	5	"	221	. "	
1 " 12	10	"	7	"	30	"	
1 " 10	9	"	Ò	"	55	"	
1 " 6	5	"	3	"	45	"	
1 " 5	4	"	4	"	27	. "	
1 " 4	3	"	5	"	10	"	
ī " 3	2	"	5	"	52 1	. "	
ī " 2	1	"	6	"	35	"	
ī " ī	_	"	7	"	17	"	

Reserve solutions of double, triple, or quadruple strength can, of course, be provided with any system of measures. To make a reserve solution we simply either take double, triple, for quadruple weights of the solid, or make up the total volume to only one-half, one-third, or one-

quarter the bulk of a solution of normal stock strength. Thus, if we want a 60 per cent. or 3 in 5 reserve solution of hypo for the purpose of supplying a 20 per cent. stock or 1 in 5 solution; instead of dissolving, say, 3 parts of hypo in water to make 15, we can either dissolve 9 parts in water to make 15 or 3 parts in water to make 5. If then we take 1 part by volume of the reserve solution and add 2 parts of water, so as to triple the bulk, we have a solution of the strength of 20 per cent., or 1 in 5.

This method of converting a strong reserve solution into a weaker stock solution illustrates a mode of producing a dilute solution that may be styled the method of proportionate dilution. This is the first method to be considered, but it must be pointed out that though it is a very easy mode of replenishing a stock solution from a reserve solution, it is not always, or even often, a convenient method of diluting a stock solution down to a working strength, in spite of the fact that it is the method almost universally prescribed in developing formulæ.

In these formulæ we have two or more stock solutions which have to be mixed to produce the developer. This mixing of two solutions involves the dilution of one by the other. Thus supposing one to be a 2 per cent. solution of pyro and the other a 16 per cent. solution of soda, a mixture of equal parts of each contains 1 per cent. of pyro

and 8 per cent. of soda, each portion being doubled in bulk by the addition of the other. If, then, we again double the bulk by adding two parts of water we have a solution containing per cent. of pyro and 4 per cent. of soda, which is

a normal pyro-soda developer.

This is an ordinary example of the method of mixing a developer by proportionate dilution, and a very little consideration will show its disadvantages. First, we must have a 16 per cent. stock solution of soda to produce a 4 per cent. solution as the result of dilution in the proportion of 1 to 4; but a 16 per cent. stock solution is of a very inconvenient strength for other purposes, and the employment of several different developers, all to be mixed by proportionate dilution, will necessitate the provision of a separate stock soda solution for each. Further, even if we use only one developer, we can easily modify it in an intelligent fashion. Suppose we want to use 1 per cent. of pyro with 5 per cent. of soda. The stock solution of pyro must still be diluted in the ratio of 1 to 4, but the soda solution in the ratio of 16 to 5, a process which lends itself to probable blunders. The formula may tell you to use, under certain conditions, "a little more soda" solution, a haphazard procedure that has no good features, but which is likely to be adopted by reason of the trouble involved in the use of the inconvenient 16 per cent. solution. If we drop the system of proportional dilution we can keep stock solutions of generally convenient strength, which can be used with equal facility either for the purpose of mixing a developer of normal strength or of making one of different but definite strength. The method of using such stock solutions differs according as we consider the percentage or the rational strength of the working solutions, and also as we require to make up a definite or an indefinite total quantity of solution.

Dead Black Varnish

INSTEAD of using gold size, turpentine, or shellac varnish for making a dead black, a solution of celluloid in amyl acetate may be employed. Spoiled film negatives may have the whole of their gelatin removed, and then, having been cut up into strips, may be placed in a wide-mouth bottle with a good cork and covered with amylacetate. It should be shaken occasionally, and in a day or two the whole of the celluloid will have dissolved. If the liquid is too thick more of the amylacetate may be added, together with sufficient lampblack to give the desired result, which should be found by trial. It can be strained through muslin to take out any particles of gelatin, or lumps of black, and kept in a bottle for use as required.—Photography.

Photographing China, etc.

When photographing porcelain bric-a-brac and similar subjects, it is very important to show the pattern clearly and in its correct light and shade, for which purpose a panchromatic plate and a suitable color screen will be found invaluable. The lighting must be carefully arranged, so as to avoid staring reflections likely to interfere with the proper display of the pattern; but, at the same time, some reflections are a necessity to brighten up and to suggest the character of the ware. It will be found that the best way to get what is needed is to use as large a diffuser as possible, so as to do away with patchy reflections: bearing in mind that the way to dodge reflections which are not wanted is not to attempt to tamper with the reflecting surface, but to remove or cover up the bright object which is being reflected.

The nature of the background will be governed by that of the object. A sheet of card, or a board, over which black velvet has been stretched, makes a very suitable background for many such things; but, in some cases, a plain white card, or a gray

one, may be used.

Vessels with an opening at the top, such as vases, cups, etc., should be photographed with the lens slightly above the top of the opening so as to show it. If need be, the camera front may be dropped a trifle, so as to bring the picture well on the plate. A fairly long focus lens for the size of plate adopted should be used to avoid any unpleasant fore-shortening.—Photography.

The Reversing Back and the Square Plate

BEFORE one is familiar with the use of the reflex the possibility of making all the adjustments right up to the actual moment of exposure seems to be one of its greatest advantages: but experience with the instrument soon demonstrates that this power looms larger in theory than in actual practice. The fact is that in use one abandons to a great extent all idea of focussing at the last moment, doing the focussing deliberately on the point at which the moving object is to be photographed, using the finder to show when it reaches that point, and then pressing the button. At the actual instant of exposure, whether with a reflex or with any other type of camera, there is quite enough to occupy all one's attention without having to think of the focussing. That should have been done already.

To some extent also this applies to the reversing back. It is a luxury to have one of these smooth-working rotating backs, which can be turned at the very last moment, when the shutter of the dark slide has been drawn; but in practice, there again one must decide which way of the plate the picture is to be taken some little time before the moment comes when the button is to be pressed. While not condemning the rotating back as unnecessary—I use one, and should be sorry to be without it—it is a question whether there is not a better way of accomplishing the same result.

One great objection to the use of the revolving back is that, except in the most elaborate instruments, it is not possible to have a finder which will show just so much of the image as will fall upon the plate—no more and no less. Ingenious devices have been designed, and are fitted to some instruments, by which the finder image automatically changes as the revolving back is turned; but they are necessarily complicated and costly.

The alternative is a square finder with the two arrangements of the plate pencilled on the ground glass, or with the corners blocked out to act as guides. When we are working quite deliberately, and can give careful attention to each point involved, this arrangement works well enough; but the reflex is of all hand cameras that form which is most often employed for work that is not deliberate; and then sooner or later comes the time when we think the back is in one position when it is actually in the other, and when we develop we find we have included a good deal that we did not want, while we have not included something that we did want, which does matter.

Any finder, whatever may be the camera to which it is fitted, which is capable of showing an image which will not fall on the plate, is a snare; and the more elaborate the instrument the more dangerous the snare, because one puts more reliance upon it.

A simple way of dispensing with a reversing back in many hand cameras is to fit two finders, or one which is reversible; and then merely to turn the camera bodily in the hands. It is not possible to make a reflex with two finders—at least with two full-size finders; while it is awkward to use a reflex camera on its side.

There remains the square plate. Some of the earliest reflexes were made in this form; and there is a great deal to be said in its favor. If I ever get another instrument on the reflector principle, I have determined that it shall be fitte 1 to take plates 3½ x 3½ inches, which will do away with all need for a reversing back and a marked or changing finder. Such a size is big enough for all practical purposes, and the shape allows the actual boundaries of the picture to be decided deliberately after the negative is made.—

Amateur Photographer.

Success in Squeegeeing

LIKE many another photographic operation, squeegeeing is quite simple and easy when it is understood; it is in attempting to carry it out on difficult or impossible lines that the trouble arises.

The greatest source of failures is the omission

to recognize that to ensure successful stripping, the film on the paper must be hardened before it is squeegeed. There are various ways of doing this.

In the case of bromide or gaslight papers we can use a combined hardening and fixing bath. A suitable solution can be made by dissolving in a pint of water 2 ounces of sodium sulphite crystals, and adding to this an ounce and a half of glacial acetic acid and an ounce of powdered alum. To each pint of plain hypo solution of the required strength 5 ounces of this should be added.

An acid fixing bath is unsuitable for P. O. P., which should always be fixed on plain hypo; but in that case we can apply a hardening bath, when the prints are fixed and washed. Such a bath can also be used with bromide or gaslight papers if preferred. A dilute solution of formaldehyde (also known under its German trade name of formalin) is suitable; one part of the ordinary commercial formaldehyde to nine parts of water is a suitable strength, but no very great accuracy is required. Four or five minutes in this liquid will harden the gelatin on the paper sufficiently to remove all risk of sticking, if the other part of the operation is properly carried out. Formaldehyde being volatile, there is no need to wash the prints further, it will dry out with the water itself.

Everyone knows that when the fixed negative has been washed in water that is at all hard there is a kind of deposit on its surface, which is removed by giving it a gentle rub with a tuft of cotton wool before putting it up to dry. The same kind of deposit often gathers on the surface of a developed print, and it is just as important to get rid of it before squeegeeing. While the prints are in the last washing water, or in the formaldehyde solution, if that is used, it is therefore a good plan to give their surface a rub over with the cotton wool.

Hardening of the film is only a part of the battle, but an important part, especially in hot weather, when moist gelatin is very prone to decompose. The squeegeeing surface must be suitably prepared. Glass, while giving the highest gloss, is not so popular as ferrotype or pulp glazing sheets; because there is undoubtedly less tendency to stick in the case of the latter. The reason for this is that the varnish surface has an inherent greasiness which helps stripping; moreover, the gloss not being so high as on glass, there is necessarily less adhesion. Many failures with ferrotype originate in the practice of cleaning the sheets with soap and water. This should never be done, since the soap removes the slight trace of greasiness which is so useful. While it is important that the sheets should be clean, it is not necessary to be constantly cleaning them. If the squeegeeing is properly done, and the prints strip easily, they will leave the surface quite clean and ready for a fresh lot. If it has to be washed at all, it should be washed with plain water, wiped with a dry cloth free from fluff, and when it is perfectly dry it should be polished.

To make the polishing solution, one part of ordinary paraffin oil is mixed with about ten times its bulk of benzine. A few drops of this are put on a clean rag and quickly rubbed over the surface, and then, with a clean cloth, it is

given a final polish. The same treatment should be given to glass on which prints are to be squeegeed. The vapor of benzine is inflammable; so the work should not be done in a room in which there is a naked light, such as a fire. There is no absolute need to apply the paraffin mixture every time the sheet is used, but it is better to do so, as it is very little trouble and may save a batch of prints.

The polishing cloths used may be of the kind known as "glass cloths." When first bought they should be well washed, to get any dressing out of them; and when not in actual use it is well to keep them in a box to themselves and not to use them as dusters. The slight trace of greasiness which they pick up in the polishing makes them more efficient, and if kept like this they will serve for a long while before they need be washed

again.

In squeegeeing the prints, they should be taken up with plenty of water, as it is then much easier to put them down in such a way as to make sure there is no air enclosed between the print and the sheet. With this object, a print should never be put down so that its two ends are in contact with the sheet before its center touches. In the case of small prints, one edge should first touch; and then, gradually lowering the print, any air-bell will be pushed along and out at the last edge to come into contact. Big prints should be held by both hands, in a loop, the loop coming in contact with the squeegeeing surface first, and then contact extending outward in both directions to the edges. These directions may seem fussy and elaborate, but the methods described must be followed if squeegeeing is to be a success every time, and are what an old hand does almost instinctively.

Some people prefer to squeegee the bare print, others use sheet rubber. In my own practice, I first put a couple of stout blotting sheets on the prints and roll well through those a time or two, and then removing the blotters, I give a good rolling without them. The rolling must not actually be violent, but it may be vigorous, and, by squeezing out a good deal of moisture, will make the drying all the more rapid. The prints ought to adhere well to the ferrotype. If they have a tendency to slide about, it is generally a sign that they have not been properly hardened.

Once on the ferrotype or glass they should be left undisturbed until bone dry. Nothing is gained by trying to pull them off too soon. They generally show signs of coming away at the edges when they are ready to strip, especially if the sheet is bent a little. They may even fly off, although this indicates that it was excessively greasy. Heat should not be used for drying, as there is a risk of it causing the prints to stick; but a warm room, or a warm place in the room, as for example, two or three feet above a radiator, will facilitate drying and do no harm.

If the glossy prints are to be mounted with paste or any other adhesive containing water, they must be provided with a waterproof backing before they are stripped, or the gloss will be damaged by the moisture. Waterproof paper can be bought in cut pieces for this purpose. The sheet may be brushed over with mountant, and while quite limp put down upon the print,

covered with a sheet or two of paper, and well rolled into contact. It is best to wait until the print is almost dry before doing this; and plenty of time must be given afterward before attempting to strip off the print, as the waterproof paper, of course, delays the evaporation of the moisture. The operation should be done carefully, to avoid getting any of the mountant on to the ferrotype or glass, as this would mean a very thorough cleaning before it could be used again; but by pasting the waterproof sheet and not the print, the sheet being a little smaller than the print on which it is put, there should be no trouble on this score. The print and its backing paper are trimmed after stripping.

An alternative course is to brush over the back of the squeegeed print, when dry and before stripping, with a strong hot solution of gelatin or good glue, and to allow this to dry. The stripped print can then be mounted by placing it on a damp card and running it through a roller press.

—Amateur Photography.

The Choice of a Lens

A GLANCE at the advertisements of lenses reveals a perfectly bewildering number of types among which to select; or, at any rate, a bewildering number of names. The actual patterns are fewer, as in many cases the same design appears under a variety of names: but even allowing for this there are still very many quite distinct forms. Most of the differences resolve themselves into various ways of getting the same result: and, given equally good workmanship, there may be extraordinary similar optical qualities, although the construction of the instru-

ments may be altogether dissimilar.

If there is one thing which impresses itself more than another upon the photographer in the early stages of his photographic career it is the importance of having a good lens. He is, therefore, very much puzzled when he comes to make a selection and finds so wide a field among which to choose. He very naturally tends to attach importance to the selection of the right pattern; whereas he may be unaware that, as far as its influence upon his results is concerned, focal length and rapidity play a much greater part than design. Quality of workmanship is a factor which must not be overlooked, especially for hand camera work. For stand camera photography, in which, generally speaking, great rapidity is not important, quality of workmanship is not so necessary. One naturally likes to have as perfect an instrument as possible; but, rapidity apart, very good results can be got from very poor lenses.

Most modern anastigmats are best described as "Universal" lenses: that is to say, they are suitable for all round work; the days of the specialist lens being over, except in a few very restricted cases. Thus the "portrait lens," so-called, was particularly suitable for portraits, only because it was much more rapid than its contemporaries, working at f/4 or f/5 as against f/8 or f/11. Nowadays a good many anastigmats, which are not specifically called portrait lenses, work at as large an aperture; while, at the same time, the great increase in the sensitiveness of

our materials has done away with much of the need for extreme rapidity in the lens for portraiture. So that the most rapid lens finds its greatest use on a hand camera; while many portraitists employ lenses which do not work at a larger aperture than f/6 or f/8, sometimes much

smaller than that.

The "rapid rectilinear" took its name from the fact that at the time it was introduced, working at f/8, it was the fastest lens which gave an image free from any bending of straight lines ("rectilinear"). Today every anastigmat, except a few single combinations, is rectilinear, as a matter of course; and nearly all are more rapid than f/8. They are therefore quite suitable for all the work for which the rapid rectilinear was

specially employed.

There was also the "wide-angle rectilinear," which worked at about f/16, but included a very wide angle. Many modern anastigmats can be used as wide-angle lenses by employing them on plates which are larger than those for which ordinarily they are used; since they have the ample excess of covering power needed. The rapid rectilinear was not a wide-angle lens; merely because, when used on a larger plate, the image did not extend up to the corners, which were therefore left blank. Whereas in many types of anastigmat there is this reserve of covering power for use when required; or, if we do not wish to use a larger plate, we may have as a wide-angle lens an anastigmat made for a smaller size than that which the camera takes.

The wide-angle quality, also, is no longer in such great demand. Photographers today are more particular in the matter of perspective; and although if one is limited for room, a wide-angle lens is just as necessary as ever it was, if we are to photograph the subject at all; there is, among amateurs at any rate, who can pick and choose their subjects much less tendency to photograph those which require a wide-angle lens. A few years ago such a lens formed part of the equipment of every photographer who could afford more than one instrument; now it is met with much less frequently, and a great many workers get along quite well with a camera on which they could not use a wide-angle lens if they had it.

With the exception, therefore, of lenses for quite special purposes, such, for example, as softfocus lenses, telephoto lenses, etc.: the choice of a particular pattern is not what is important. The points to consider are its focal length and its

rapidity.

It is recognized now that, for pictorial work at any rate, a comparatively long focus is advantageous, as it gives us a more pleasant and natural-looking perspective. Not that we cannot get precisely the same perspective with a lens of short focus, used from the same standpoint, by trimming down the picture: but that the long focus lens gives us that picture on a larger scale, covering the whole of the plate. Whereas the lens of short-focus gives it on a small scale in the center of the plate, and at the same time includes a great deal more all round, the inclusion of which in the picture is the cause of the objectionable wide-angle perspective.

In the past, one often came across advice to the

effect that the focus of the lens should be approximately equal to the diagonal of the plate. gives about 8 in. for a half-plate, $5\frac{1}{4}$ in. for a quarter-plate, and so on. The angle which is then included is a very convenient one for allround work; but, as opinion goes today, the focus is distinctly on the short side. We know several leading hand camera workers who never use a lens of less than 7 in. on a quarter-plate, and the popularity of such instruments as the Telecentric indicates that a good deal more than this is quite common.

One result of this tendency is to level up lenses in quality. A nine or ten inch rapid rectilinear of good quality will cover a quarter-plate crisply right up to the edges just as well as a high-class anastigmat; and, if f/8 is a big enough aperture for the work that is to be done, there is then no need for anything better than the rectilinear. When we come to lenses of five or six inches focus for a quarter plate, then we find at once that the definition of the anastigmat toward the corners of the plate is much better than that given by the rectilinear, unless this is much stopped down, say to f/22 or even more.

The beginner is well advised to get a complete outfit, and to take the lens which the makers think to be most suitable in focus. The beginner also is more likely to wish to photograph subjects irrespective of whether he can get far enough from them to get a good perspective rendering; and, therefore, he will regard a lens of com-paratively long focus as imposing needless limi-tations on him. The more advanced worker, who has learned to attach more importance to the rendering of his subject, and who has ceased to be keen upon merely recording things, will find that the longer focus lens more often gives him what he wants; and will not be particularly sorry to have the temptation to do wide angle work removed.

In no class of photography is focal length more essential than in portraiture. It is much more important to have a lens of long focus of any kind than it is to have a regular "portrait lens" of short focus. Here again is a fine field for instruments of the Telecentric kind; since they give the long focus required, and at the same time are rapid, and do not entail any great camera extension.

The modern anastigmat, in certain patterns, has another advantage for all-round work which to some extent is shared by the rectilinear. One of its combinations can be used by itself when we require a lens of longer focus. Such a single lens should always be used for portrait work, in preference to the complete lens, if the focus of the complete lens is not fairly long. It is true that the exposures with the single lens are necessarily much longer, as the f/ number of the stops is increased in the same proportion as the focus is lengthened; but unless the lighting or the sitter absolutely precludes the longer exposure, the improvement in perspective rendering is well worth the price paid for it in rapidity

An alternative, of course, is to use the whole lens, and so get the advantage of its rapidity; but to use only half the plate or even less, being satisfied with the smaller image. Where enlarging is done this is preferable. We not only get the rapidity, but we save in plates, since each plate can be used for two pictures instead of one.—

Amateur Photography.

Studio Slides

ONE of the greatest comforts to the singlehanded operator is to have a sufficient number of slides to enable him to complete a sitting of any reasonable number of poses without having to refill. In this respect the American camera makers give us a good example. Instead of supplying one or two slides heavily and expensively made, each holding two plates, the Americans send out their studio cameras with any desired number of cheap light plate-holders, each carrying one 7 x 5 plate. The camera stand usually has a rack on either side, one being for unexposed and the other for exposed plates. The single plate-holder has much in its favor; it is an absolute preventive of double exposures, which often occur through forgetfulness as to whether it is the first or second plate which has to be used, and it is actually easier to fill two slides each with one plate than to put two plates edge to edge in one frame without the risk of over-This is naturally not the time for alteration in studio equipment; we must be thankful now if we can get the simplest repairs done, but after the war we hope that, as in many other things, it will be seen that the old way is not the only way, and not even the best way, nor the cheapest. As in every other walk of life the feminine element will have more influence in photographic matters, we may perhaps look forward to a change in the fashion of studio slides.—British Journal of Photography.

Chips from a Photographer's Workroom

It is a very good wrinkle for the dark room, especially in the case of those unfortunate photographers who use a very dim and very ruby light, to screen the eyes from the direct light. To have the light directly before their eyes is objectionable in a double sense—first, from the danger to the eyes; and, secondly, from the retinal glare diminishing the delicacy of perspective of any object—a negative, for example—that it is desired to scrutinize. All lights in front of the face should be so screened as to be shaded from the eye while falling unchecked (of proper strength, of course) upon the developing. There are many ways of doing this; to speak of it is almost to point out the remedy. We know one photographer whose light is rather low down, and he screens by the simple plan of placing his

chemical shelf just the right height to act as a screen of this kind.

Success depends more on the man than on his appliances. Here is a description of the "studio" of a well-known old-line worker in the days when photographers were nomadic. His studio, which he moved about from place to place, as suited his fancy, consisted of two pairs of blankets, stitched together end to end, forming a sheet of about 15 by 7 feet. One end was tacked to a ridge-pole about 10 feet from the ground, and it descended like the roof of a tent to another pole 2 feet lower and 5 feet to the right or left, and from that to the ground. The hand screens were simply barrel hoops covered, some with white and some with brown paper, to which handles like broomsticks were fixed.

With such primitive appliances he seemed to have had the lighting under perfect control.

Waterproofing Blue-prints. A simple and inexpensive method of waterproofing the prints which renders them completely impervious to weather and water is given in Mines and Mineral. The waterproofing medium is refined paraffin, and may be applied by immersing the print in the melted wax, or more conveniently as follows: Immerse in melted paraffin until saturated a number of pieces of an absorbent cloth a foot or more square, and when withdrawn and cooled they are ready for use at any time. To apply to a blue-print, spread one of the saturated cloths on a smooth surface, place the dry print on it with a second waxed cloth on top, and iron with a moderately hot flat-iron. The paper immediately absorbs paraffin until saturated and becomes translucent and highly waterproofed. The lines of the print are intensified by the process, and there is no shrinking or distortion. As the wax is withdrawn from the cloths, more can be added by melting small pieces directly under the hot-iron. By immersing the print in a bath of melted paraffin the process is hastened, but the ironing is necessary to remove the surplus wax from the surface, unless the paper is to be directly exposed to the weather and not to be handled. The irons can be heated in most offices by gas or over a lamp, and a supply of saturated cloths obviates the necessity of the bath. This process, which was originally applied to blue-prints to be carried by the engineer corps in wet mines, is equally applicable to any kind of paper, and is convenient for waterproofing typewritten or other notices to be posted up and exposed to the weather.

The Photographic America

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FINISHING PHOTOGRAPHS IN MONOCHROME AND COLOR'

By ALBERT J. LYDDON

THE purpose of my appearance before you this evening is to demonstrate some advances in the modes of finishing photographs. These, while essentially professional in their nature and giving the finisher a facility of work over all other methods, both in variety of technic, capidity, and value of result, at the same time do not lose sight of, but rather give an impetus to, our aim at the Polytechnic to raise the artistic quality of finishing. As to our ideals in this respect, if we have not already attained them yet, I have been encouraged by a well-known artist, who has expressed his approval of the methods as being greatly superior in results to ordinary methods. As to the professional value, a photographer who has a very large output told me they are the smartest things in finishing he has ever seen.

¹ A paper read before the Royal Photographic Society of Great Britain.

I suppose it is not often that an artist submits to the loss of artistic friends as I have done. To be looked down upon from their greater eminence as only a photographer was galling, but it was in the hope that it would be possible for me to help to make the art of finishing a real art. To give the student the benefit of artistic knowledge that I have attained by hard work and training, and to enable him to use that knowledge thoroughly in his own particular branch, has been my aim. To this end a knowledge of surface anatomy and the action of the muscles of expression, not only by diagram, but with the living model, is taught-of course, as a painter has to learn them, not a doctor. Also without going into the chemistry of color, in which I had the benefit of a course of instruction at the Academy Schools under Professor A. H. Church, I give a palette in which not only are the colors as permanent as it is possible to have (51)

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them, but with the added benefit that, in mixing, no care need be taken to prevent deterioration by the chemical action of one on the other. I also give a diagram of mixtures of colors to give the complementary colors to use in dresses, backgrounds, etc.

One has many discouragements, and no doubt they will come over these newer methods because they clash with the conventional in photography. That is the fate of every new thing at first, because the eye is not accustomed to it. However, these methods are very elastic and give results which are tinted photographs, as delicate as you like and as photographic as you wish, or, in skilful hands, results which look like a sketch with very little photographic basis. But, if I have my discouragements, I also have my encouragement. students who have learned with me right through, from tinting photographs to painting ivory miniatures without a basis, have exhibited two of them in the Royal Academy and one in the Dublin Academy. One of these students, a lady, was showing at no less than nine art exhibitions in one year.

In finishing professional work, surface finish covers a multitude of sins. Have a surface finish by all means, but let it be a drapery over truth that it covers but does not conceal. The true basis of good finishing, I take it, from the photographic point of view, is lengthening the gradation, while the underlying principles of art are employed to beautify and eliminate ugly form, correct tone values and mass the lights and shades by suppressing unimportant I have purposely left out the putting in of detail, as this is a very prevalent fault with most finishers. Why detail where a blaze of light blurs it, or where absence of light does not reveal it? Shadow is an appeal to the imagination and gives that sense of mystery which is so essential to art, and insistence on excessive detail in the high-lights only makes them muddy.

A few fundamental truths well rubbed in materially assist the student once the manipulative difficulties have been mastered. I will give you some of these truths in tabloid form:

est darks are always small.

First point: Highest lights and deep-

Second point: The tones next in strength to both should be broad and. certainly in the case of shadows, not cut up with detail.

Third point: A cast shadow is always darker than the shadow side of the object casting that shadow, unless there is a difference in color value of the two surfaces.

Fourth point: Darkest darks are usually near the highest lights. This is by reason of the cast shadow. Another cause of this is that the broad mass of shadow shows a certain amount of reflected light which the eye does not easily detect in a small shadow.

Fifth point: Shadows with definite shapes are darker toward the edges. This, if acted upon, would stop that fluffy softening off which too often covers a lack of knowledge of form.

Sixth point: In monochrome do not, except broadly, try to represent color value by tone value. You see the futility of this if you try to show the pink of a cheek by using black lead. On the other hand, it is necessary that the light on dark hair should be many tones darker than the light on a face; and, again, the light on a white collar lighter than the light on a face. If color value is not represented thus broadly you would only get the effect of a marble bust.

Seventh point: There are no mechanical curves in nature, but each curve is made up of straight lines of varying length.

Eighth point: There is no such thing as outline. Form should be represented

by tone values and planes.

Ninth point: Variation in form, tone, and spacing.

Tenth point: That a following of form by a similar form is incorrect.

Eleventh point: That curly hair depends for its beauty on a straight line.

Twelfth point: That a background is necessarily behind the figure.

Thirteenth point: That the direction of slight form in the background will often correct an ill-balanced figure.

With these few truths remembered and put into practice, and a due mastery of the mechanical medium added, the student has made a good start.

In color finishing the principles are the same as in black and white, with the addition of color value. In painting, pure and simple, you have to make your colors the proper tone value. In color finishing you have a tone basis which you have to kill, if you are to approach pure and clean color. This necessitates the use of brighter and more transparent colors than in ordinary painting. You have a wider scope, inasmuch as you have the subtle factor of color value to express form as well as tone value.

Before leaving this section I would like to remark that a finisher is first or third rate according to his faculty of observation. That is the great thing needful. If the knowledge is in his brain, his hand can convey it. Lack of observation is fatal to art. I saw an old colored print while in the Trossachs, of Christ blessing little children. His beard was joined to the hair behind the ear. Some years ago I came across a landscape with cattle. It struck me as being peculiar, but in what? One of the cows was in the act of lying down hindquarters first; in fact, sitting down. A very curious breed that! And have we not all seen the highly finished enlargement with eyes that would be a physical impossibility to close, or mouths that, if the person yawned, would split across the cheek, because the structural form had been disregarded? not to mention the numerous enlargements with collars as white on the shadow side as on the light. Of course, white takes a shadow the same as everything else. Of course, the finisher must not see too much, like a celebrated deceased Academician who used to paint eye-lashes on his cows which were at least a quarter of a mile distant. Have you heard of yet another Academician who painted long after he should have retired? He had a predilection for painting angels—possibly because he did not have to pay his models. Once he painted six toes on one of the angels' feet. On varnishing day one of his brother R. A.'s kindly painted the feet afresh with the usual number of toes, but could not help remarking to him afterwards, "Why, man, whoever saw an angel with six toes?" With a successful wriggle, the old painter gave his answer. "Well, did you ever see one with less?" All of which proves that unless you apply common sense to your observations and train the eye properly, perhaps you had better keep to the conventional.

Coming now to the manipulative side of the subject, what does a good finisher look for in his materials? broadly, three things:

(a) Their suitability of matching tone and surface.

(b) The ease of their modification or removal.

(c) The rapidity of their application. Let us take the advantages and disadvantages of several of the older methods of finishing.

Chalk Finishing

Advantages. Ease of modification

and removal. Fairly rapid.

preparation Needs Disadvantages. Difficulty of matching by pumicing. tone and surface. Requires fixing.

Monochrome Water-color Wash Work

Advantages. Ease of matching tone and surface and easy to remove. Requires no fixing.

Disadvantages. Not easily modified. difficulty in flowing on flat washes without hard edges, also difficulty of applying a second wash without removing a first wash in patches. This does not apply Platinotype paper; but with this paper there is an added difficulty of removal without detriment to the surface. Slowest of all methods.

Aërograph Work

Advantages. Rapidity of work. Can be used on any surface including negatives. Ease of removal.

Disadvantages. The mechanical difficulty has to be mastered. Not easily modified. Tends to monotony by reducing various materials to one kind of sur-

Finishing Imitation Silver Point with Lead-pencil

Advantages. Easy of removal, modification, and matching tone and surface.

Disadvantages. The finisher must know lineal perspective and how to apply it and to be able to sketch to obtain the best effect.

Pastel Finishing

Advantages. Ease of modification and alteration of color.

Disadvantages. Small detail hard to manage. Obliterates the basis if worked as pastel should be worked. This necessarily requires a finisher who has had a training in drawing. Must be fixed. This operation spoils the subtle and delicate beauty.

Oil Finishing

Advantages. Easy to cover surface or to paint out mistakes. Defects in the photograph removed with facility.

Disadvantages. Obliterates the basis. Being essentially an impasto process only a trained artist should attempt it; but as this is not always possible a finisher will compromise by using his paints transparently, which is the essential attribute of water-color, but using a more or less thick medium, which gives an oily surface, with the result that the shadows look like a water-color glazed with gum; the lights painted impasto look like an oil painting. Thus you get neither the one thing nor the other.

An Improved Method of Finishing

We now come to the improved method of finishing, which I propose demonstrating. In result it has the appearance of a water-color, but with all the ease of working in oil. The advantages of the new method over the old ones, even in the three elementary heads that we noted a finisher would require, are:

(a) Suitability of matching tone and surface. It will match any tone or color and any surface, rough, matt, or smooth, or the shadows can be made just short of being matt to give richness, or the whole can be made semi-glossy or, if preferred,

varnished when dry.

(b) Ease of modification or removal. Perfect in both ways, and portions can be removed without leaving hard edges, or the whole removed, leaving the surface as it was originally. No fixing is required.

(c) Rapidity. Quicker than the Aërograph, while it can match varying surfaces of material, thereby allowing for

individuality in the work.

(d) Other advantages of this method. No preparations of the print necessary. Color permanent if you use the palette of which I shall give a list later. Correction, spotting, or stippling can be done when dry with ordinary water-color which takes easier than on the ordinary bromide paper.

Tone value may be altered or color added by the Aërograph, or the actual modelling may be accentuated by working with lead pencil even over color work. But with a little practice with the first process, with the exception of spotting, one can soon dispense with these aids.

There are two disadvantages compared with processes other than oil fin-

ishing.

(a) It takes about twelve hours to dry.(b) Work in the first process must be

finished at a sitting.

The essentials of this process are:

(a) The paper must have an oil-resisting surface, such as gelatin, medium rough bromide paper being the most suitable.

(b) For color finishing the print should not be quite fully developed, but coming

near to a perfect enlargement.

(c) It should not be pumiced in preparation for the work, or spots scraped; in a word, the surface must not have been abraded, as it is detrimental to color and permanency if the oil should penetrate through these abrasions.

(d) If a smooth paper is used, I should advise a little of No. 1 medium being rubbed over and left on to prevent hard edges. This is best applied with cotton-

wool.

There are two mediums:

No. 1, which is used for all matt surface work.

No. 2, for dark shadows in matt surface work if you wish them not to "dry in" or what an artist would call, technically, "bloom."

No. 2 medium is used for semi-glossy

paper.

The outfit for this process, both black and white and color, would comprise a white wood palette, palette knife, double dippers, a selection of hog-hair brushes, one or two sable brushes, a soft rubber, plenty of cotton-wool, and No. 1 and No. 2 medium.

The list of colors is a restricted one for the sake of permanence. Flake white, aureolin, raw sienna, burnt sienna, rose madder, vermilion, light red, ultramarine, transparent emerald oxide of chromium, burnt umber and ivory black.

You will see that up to the present I have only dealt with bromide paper. This is chiefly because the ordinary variety does not require preparation; but some platino matt papers, together with platinotype paper, will need the application of some oil-resisting surface, such as gelatin. Professor A. H. Church. in his course of lectures on Chemistry of Painting at the Academy School, recommended a specially prepared collodion for the priming of canvas, and I think this could be used equally well as a coating for absorbent papers. I may remark here that the method of work I am demonstrating is still in the experimental stage, but the measure of success obtained promises well for the broadening of the basis, so that it can be used on all papers.

New work looks strange at first, because one is unaccustomed to see startling changes in method, but the examples shown here are varied and perhaps daring, in order to show the scope of the process. You can have it as photographic as you will, or so sketchy that one doubts if it have a photographic basis, while its possibilities for expressing various fabrics are also shown.

Up to the present we have dealt solely with portrait work, but not because this is the only field of usefulness. In land-scapes sky effects can be tried and altered time after time till one gets the right effect. This can be done to produce a finished result, or merely to arrive at the kind of sky suitable to print it. Body color—that is, opaque color such as flake white—can be used sparingly in

color work, but I do not advocate it, and it is most unsatisfactory in black and white work on the print, whatever medium you use, but I should say it could be used to force the contrast of a print if it was then copied. In this paper I have merely touched on a few of the points which constitute finishing when raised to an art.

I am well aware of its shortcomings, more especially one, that I am not a lecturer, but essentially a worker and a teacher, and as such, accustomed to marshal and condense the salient points. With this explanation I will conclude, trusting you will overlook the disintegration which would not be so apparent in the paper of a trained lecturer.

At the conclusion of his paper, Mr. Lyddon proceeded to give a demonstration of his new method. Taking a portrait enlargement, which was upon the easel, he rubbed a little of the medium over it, although, he said, this preliminary rubbing was not always necessary and was done on this occasion owing to the warmth of the room. After one or two minutes he proceeded lightly to put the color on with the brush, and then rubbed it over with a pad of cotton-wool, producing in a very short time admirable flesh and hair tints. Where the coloring had gone slightly over the outline of the face he was able to remedy the defect with the application of a little of the No. 1 medium and the sable brush, wiping out with cotton-wool. In applying the color to the eye, he pointed out that in this case the cottonwool should not be given a rubbing action, but that it was sufficient merely to put the wool on the spot and give it a slight turn round. A very slight streak or two of color sufficed for the background after it had been rubbed in with the cotton-wool, and the least touch of black was able to make it darker. laying on the color for the background it was necessary to bring it up to the face, and to work away from the face with the cotton-wool.

Subsequently Mr. Lyddon gave a demonstration of finishing a landscape in monochrome. The landscape was one which purposely had not been properly

printed, in order to show the amount of variation that could be obtained upon it. In black and white work, unless blueblacks were used, one was not sure of his color. In working with ivory-black it was well to mix with it a little French ultramarine. It was necessary, if the after-work was not to show, that the medium should go over every part of the surface of the print, although the paint

need not do so. He demonstrated with what facility sky effects could be obtained, and also the ease with which it was possible to remove the work done, reproducing the original flat-looking print. If it was required to darken any portion a clean brush should always be taken and the paint used nearly dry. The demonstration was highly successful.

COMMERCIAL PHOTOGRAPHY'

THE main idea which should pervade the mind of the commercial photographer is that he is not a professional man but a manufacturer who has goods to sell. It does not matter that these goods have to be made to order, for in that respect he is on common ground with the tailor, the hosier, the builder and many others who hold their stocks of raw material ready to be fashioned to their customers' demands. Having conceded this point, the next step is to approach every possible client and to demonstrate to him that you are not only willing, but competent, to produce photographs which will be of value to him in conducting his business. To this end it is essential that the photographer should be able to produce a collection of first-rate specimens of the class of work he is seeking, and his first care must therefore be their preparation. If he has not already sufficient negatives for the purpose, his best course will be to approach some good firm or firms to which he can gain an introduction, and obtain permission to make a series of pictures of their works and wares, pre-

¹ The subject of Commercial Photography is one of special interest and value at this time. This series of articles recently appeared in the British Journal of Photography, and are so practical and helpful that we have been prompted to reprint them in the JOURNAL, believing they will form a comprehensive guide to the technical and business sides of this important occupation. These articles will treat in detail with many subjects the commercial photographer is asked to handle, with hints in finding business and fixing charges.—[EDITOR P. J. of A.]

cisely as if he had been commissioned to There is little risk of loss over this, as, after a free set of prints has been delivered, an order for duplicates will almost certainly follow, and this should more than cover the out-of-pocket expenses of the transaction. Care must be taken not to overdo this and thus introduce the evils of the "invitation sitting" into commercial work. Every order which follows should provide additional specimens, and every specially good subject should be added to the Prints of extremely difficult subjects should be accompanied by a short explanation of the circumstances in which they were taken, as the possibilities of photography are not yet fully appreciated by the general public, and a view of wine-cellars made by magnesium light may suggest the desirability of similar pictures to the proprietor of some other kind of subterranean premises. It may be well to point out that the specimens shown should be printed and mounted in the exact style which it is intended to use for the ensuing orders. Much friction, and possibly loss, may result from showing P. O. P. specimens and supplying toned or even untoned bromides, vet such substitution is not One thing is certain, the unknown. better the prints, the greater the chance of obtaining good orders, and it is therefore up to the photographer to equal the best work he has seen and to surpass it if possible. Besides the main collection, a few albums or portfolios of selected samples, which may be left with prospective customers for a few days, will be found useful. For this class of work only the best materials should be used; there is no economy in using cheap brands of plates, paper, and especially mounts. The best work commands the highest price, and the difference between reliable and doubtful material is, after all, very small.

In approaching prospective customers only the best class of stationery and printing should be employed, and the photographer should be consistent, inasmuch as he should make use of reproduced photographs on his letter-headings, prospectuses and price-lists. culars, particularly of an imitation of typewriting, should be avoided, and genuine personal letters, referring, if possible, to some work in hand, be sent. If it be possible to enclose a sample photograph likely to be of interest to the recipient it should always be done, as this will be kept, and may serve as a reminder long after the letter has been destroyed. A judicious "follow-up" system has its advantages, but must not be overdone, as the receipt of unsought correspondence is apt to become annoving to a busy man.

Assault should be made upon firms whose patronage is sought, and this can only be done by personal letters which contain direct reasons for the applicability of photographic advertising to this particular firm's wares or premises. case of no response to the first appeal, the "follow-up" system should be adopted and carried on until the particular firm is given up as hopeless. As photographers are not usually skilled in this class of work, it is worth while consulting some reliable firm of commercial stationers, who will draft the necessary forms as well as supply the stationery. All this may seem to involve an immense amount of work and some expense, but it must be remembered that each customer so secured will contribute a substantial amount to the year's receipts. average manufacturer will send his traveller time after time to a shy buyer, but after months, perhaps years, of persistent solicitation an account is opened, and, given satisfactory service, there is little difficulty afterward in retaining it.

The man who aspires to do a good business in commercial work must set himself a high standard of quality. He must look at the best work that has been done, and say, "I will do better," Quality must be the first consideration. and price a secondary one. Price-cutters have come and gone, and the best workers are still with us. If a man is on a twenty-thousand-dollar deal and he wants photographs to help him through with it, he would rather pay three dollars per copy for first-rate prints than twenty-five cents for poor ones. Therefore, everything that tends to the production of good work should be installed as the first step—good lenses. carefully selected for the work to be done, reliable cameras, and the best plates, paper and mounts that money can buy. When one considers the outlay which even a small printer or stationer has to go to before he can produce a simple handbill, the cost of starting in first-rate style in commercial photography seems trifling.

Let us now review possible fields for the work of the commercial photographer. There is, of course, the ordinary run of interiors and exteriors of buildings for the occupants and the builders thereof, but this does not exhaust the possibilities of work in these same buildings. are numerous sub-contractors who have executed various details of construction. and these people are often more eager to get good reproductions of their contribution than is the architect or builderin-chief. Among these we find copper roof manufacturers, mosaic and marble workers, ornamental iron manufacturers. electricians, upholsterers, elevator builders, sanitary fitters, panelling and parquet makers, and a host of others. Even cement makers have given good orders for pictures of important buildings erected with the aid of their special brand of cement. These people can usually be got in touch with through the foreman or clerk of the works, who should, of course, receive some compensation for his trouble. All these classes of customers require perfect technic so far as definition, color-rendering, and correct exposure are concerned. Here there is little scope for artistic skill, but there is

a wider field in which the faculty for seeing a picture in often unpromising material is of great value and where the mere technician is easily outclassed. In this class we find real estate companies developing new districts, railway companies who require pictures of health resorts, the councils of such resorts, the proprietors of hotels, hydros, and nursing homes, and even cemetery companies, all wanting their respective domains to look as picturesque as possible. Motorcar manufacturers have been friends to the photographer and are open to two classes of work: the purely technical or catalogue picture, and the car upon the road turning a pretty corner or halting before some well-known hotel or country inn, making a composition suitable for general advertising

Of ordinary catalogue work, which, however, forms a large proportion of the commercial photographer's business, it is not necessary to speak at length here, as it is dealt with in another section.

Cameras

In the way of cameras the commercial photographer cannot be too well provided. He has to undertake all kinds of jobs, and often will find that a special camera, or, rather, one which he can adapt from an old instrument, will make all the difference between tackling a job successfully or having to excuse himself on the ground of "insuperable photographic difficulties." For the general run of work a whole-plate camera is about the best. It should be of solid build—the square bellows pattern is better than the more portable types with conical bellows—and, in particular, should have the longest possible extension, full swing back and side swing, and should provide ample rise of front. One or two extra panels, each fitted with a carriage for the lens, but raised somewhat above the center, will often help out the rise of front provided by Also, the camera the camera itself. should provide focussing by movement of both the front and back, otherwise it is very awkward in use when one has to work in very confined quarters, with the camera pushed into a corner as far as it will go. In wide-angle work, too, the camera should allow of the tripod head coming about midway between back and front when both are racked forward in order to avoid cut-off by the baseboard when using a wide-angle lens. For this reason, and on the score also of general convenience, a loose tripod head is preferable to a turntable forming part of the camera baseboard.

Many commercial photographers keep a camera of specially high build for dealing with lofty buildings at close quarters. It allows of work of this kind being turned out in first-rate style with little difficulty, whereas without it it is necessary to resort to such expedients as making three sets of negatives from different floors of an opposite building and producing a single print from them—a poor method at the best, yet one which is sometimes called for.

In much miscellaneous work—for example, in making a series of photographs of an industry—the reflex camera is a great time-saver. It should be of half-plate size. The horizontal or land-scape pattern will suffice and relieve the photographer of the much greater bulk of the square or reversible type. Get the maker to adjust the shutter so that it allows of an exposure as long as $\frac{1}{10}$ th of a second. The high speeds are of little use to the commercial photographer, since objects in rapid motion rarely come his way.

When going out to fill an order with a stand camera, opportunities often arise for taking other subjects, the suggestion of which will bring orders from the cus-The reflex is useful here. For one thing, the work can be handled in a quarter the time required with a stand camera; for another, you can show the customer on the focussing-screen what the photograph will look like. But for such purely speculative work there is much to be said for a pocket camera, as small in size as $3\frac{1}{2} \times 2\frac{1}{2}$, fitted with a first-rate lens. A series of small pictures is good enough to interest and attract the customer and to yield quite good prints of half-plate or whole-plate size by enlargement, while the cost of the

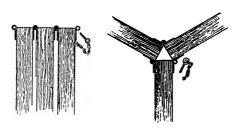
negatives in $3\frac{1}{2} \times 2\frac{1}{2}$ or quarter-plate is

trifling.

I emphasize again what I said just now on adapting old cameras. Excellent instruments of bygone pattern can be picked up from the dealers or Steven's auctions for a few shillings, and can be adapted for special jobs, for which they can be kept when the occasion arises again.

Tripod Stay and Tilting Head

Two very necessary adjuncts to the tripod are a stay for preventing the legs from spreading or slipping and a tilting head which allows the camera to be tilted up or down to any angle and also allows it, when tilted, to be rotated without altering the angle, the latter being impossible when the camera is attached to a fixed tripod head. Various types of tripod stay have been introduced from time to time, but an altogether satisfactory one is still lacking. The most usual form consists of three slotted strips of brass, one end of each being attached to a stretcher in the tripod leg, while a clamping screw in the center grips all three firmly when the stand has been adjusted in position. Some forms have consisted of cords passing through a central clamp, but these have the disadvantage that the stand cannot be moved without disarranging the cord. Although not strictly a stay, an excellent non-slipping device is made by hinging three strips of wood to a small central triangle. This is laid upon the ground and the points of the tripod legs put into

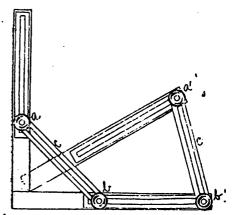


PORTABLE TRIPOD' SUPPORT

small holes or notches, of which there is a row along the center of each strip. When the stand is erected upon such a base it may be slipped about upon a stone or polished wooden floor without disturbing the level, an important consideration in picture gallery work. All risk of scratching the floor is also eliminated. A more portable form consists of three inch-wide strips hinged together at their ends, a loose pin to one hinge allowing all three to fold side by side, and occupy the space of one member of the stand when closed. It should be made to strap up with the stand without projection. The accompanying sketch shows the method of fitting.

A Tilting Head

Tilting heads are of various forms, the simplest and best pattern consisting of two small boards six or eight inches square, hinged together like a book, one board being attached to the tripod head and the other being attached to the camera by the usual T-screw. Slotted bars with clamping screws are fitted to the free ends of the boards, and serve to



PORTABLE TILTING HEAD, SHOWING THE TOP BOARD IN TWO POSITIONS, NAMELY, VERTICAL AND ALSO AT AN ANGLE OF ABOUT 30 DEGREES

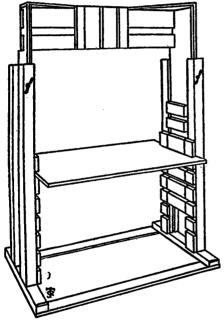
keep the camera at any desired angle. An improved form, designed by Mr. A. Mackie, is shown in side view in the drawing. The two boards are provided with brass slots, a and b, in which slide respectively the opposite ends of the slotted bar c, which is secured at any point by the milled-head clamping screws. The advantage of this is that the clamping screws do not have to be

removed for packing up the tilting

arrangement.

The slots should always be long enough to allow the camera to be pointed directly up or down, thus enabling either ceilings or pavements to be taken without using a prism or mirror, as is often done. It also allows a shadowless arrangement for photographing small articles to be readily extemporized.

The studio apparatus also should include a good rigid stand for holding the camera vertical and for supporting small flat objects on a sheet, either of



STAND FOR VERTICAL CAMERA, DESIGNED BY MR, JARVIS KENDRICK. FROM CAMERA AS HISTORIAN

glass or some solid board, below it. Sooner or later, in photographing small articles, the commercial photographer is certain to require this time-saving accessory, the usefulness of which is altogether beyond the cost of the few lengths of stout uprights required for making it and the time occupied in putting them Very often such a vertical together. stand, if for use with artificial light, can be made to form part of a recess in a workroom; for use with daylight it should be portable, so that one can place it immediately facing a window.

illustrate one excellent pattern of stand designed by Mr. Jarvis Kendrick, the construction of which is sufficiently explained by the drawings.

Lenses

For the general run of outdoor commercial work the lens should be of fairly long focus, at least 12 inches for a whole-There is no need for the very largest aperture: the great majority of subjects, on account of the sharp rendering of detail required in all parts, will need an aperture at any rate as small as f/8, and usually smaller. For this reason it is better to make choice of an anastigmat of first-rate quality but of maximum aperture, not larger than, say, f/6.8. At this and smaller apertures the definition, in the case of a lens by a maker of repute, will be better than that with an ultra-rapid lens, such as f/4.5, used with the smaller stop, which is

almost always necessary.

But in commercial photography more than in any other branch it is necessary to be well equipped with a range of focus in the directions of both wide and narrow angle. For wide-angle work, suitable foci for the whole-plate size are 5 and $7\frac{1}{2}$ in. As regards long-focus lenses, a very great deal of the success in obtaining good photographs of many of the subjects which the commercial photographer has to deal with consists in the use of a lens of focal length 20 inches or more. This is for the reason that a more distant standpoint can be taken and better drawing or perspective obtained in the photographs. This condition applies equally to large subjects, such as motor-cars or machine tools, and to small articles such as goblets or scent-Here again the second-hand bottles. dealer can offer instruments, the cost of which is small, in the shape of R. R. lenses of the older types. Many commercial workers make good use of the casket sets of lenses providing a range of focal lengths from a few inches up to These casket sets are now largely out of favor with the amateur worker, so that those of the older R. R. pattern can be bought for a few shillings. Their small working aperture is not an appreciable drawback, but those who require a greater speed of long-focus lens can select from the various anastigmat units, such as the series of "Combinables" of Messrs. Ross, the working aperture of each single component of which is f/11. Advantage may be taken of a lens of this type in making choice of the instrument for general whole-plate work. For example, the 10-inch f/6.4 "Combinable" provides two single components, one of 21 inches and the other of $14\frac{1}{2}$ inches focal length, each of f/11 aperture.

Let it be made a rule to fit each lens with a hood, say one of the Sinclair bellows pattern. It can never do any harm, and in many circumstances will make for brilliant results by shielding the lens from strong light. The fitting of a shutter of ample size inside the camera for giving time exposures will facilitate the regular use of lens hoods.

Plates

As I have already insisted, don't let the question of price stand in the way of your using the plates which you find best for the job. Most commercial work calls for a fairly fast, richly-coated plate. Perhaps more than half requires a backed plate. In going away to undertake any work for which backed plates are not likely to be wanted, you should take a packet of backed also in anticipation of other subjects turning up. A good-sized changing bag should be part of the equipment. It is easily made out of a couple of thicknesses of good silesia material, fitted with a pair of sleeves through which the arms can be inserted, and made light-tight with a pair of broad elastic bands. A double flap, made light-tight by aid of a good number of the push-on dress-fasteners, allows of dark-slides, plate-box, etc., being inserted in the bag.

For a very great deal of commercial work a panchromatic plate is essential. It is necessary not only for subjects of pronounced colors, such as oil paintings and water-color drawings, but equally for such work as the photography of furniture, documents, etc. plates and the color-sensitive variety of them, known as "process panchro-matic," also have their place, especially in the copying of documents, diagrams, typewritten letters, etc., where it is a question of reproducing lines. The commercial photographer should get and study the book The Photography of Colored Objects, published by the Kodak Company, which will give him the best insight he can have into the many uses to which panchromatic plates and suitable light-filters can be put.

(To be continued)

SEEING OURSELVES AS OTHERS SEE US

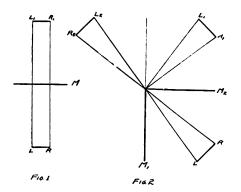
By M. LUCKIESH

TOTWITHSTANDING its limitations as to color and contrast. photography gives us a truer glimpse of ourselves than a single mirror. Through the daily use of the mirror we become accustomed to a certain image of our facial features which differs from our true appearance and in some cases markedly. The image in a mirror is reversed; that is, the left side of the image of the face, for example, is in reality the right side. Faces are never exactly symmetrical about the vertical

center line, and the variation of the image from the true appearance is proportional to the departure from facial symmetry. We do not recognize this in ourselves, for we are generally well acquainted only with the appearance of our image in a mirror. However, the difference is instantly noted when we view the face of an intimate acquaintance in a mirror. In this case we encounter a condition quite the reverse of our experience with ourselves. The true appearance of our friend's features is

well known to us, but we seldom see his face in a mirror. Consequently, it is easy to make the comparison with the obvious conclusion that the mirror is not truthful. Of course, this is easily explained if we resort to the optical law of reflection.

It is easy to observe our own true profile by the use of two mirrors, but to obtain a true front view is somewhat more difficult. However, by manipulating two mirrors it is possible to "see ourselves as others see us."



In Fig. 1 we have the case of one mirror, M. Imagine yourself standing in front of the mirror and L and R representing the left and right sides of the face, respectively. The image which you see is reversed; that is, if you imagine that you have stepped behind the mirror and have faced yourself as you stood in the first position, your left and right sides would be reversed. In Fig. 2 is shown a simple arrangement of two mirrors, M_1 and M_2 , respectively, at right angles to each other. If you place yourself in such a position that L and R again represent the left and right

sides of the face, respectively, L_1 and R_1 represent the reversed image, due to one mirror or to a single reflection. However, R_2 and L_2 represent the second reversal, or, in other words, an image of true appearance. If you again imagine that you stepped behind the mirrors and have taken the position L_2 and R_2 , facing your actual position, you will see that this image is not reversed. For the sake of simplicity the two mirrors are shown at right angles to each other. This causes the image to be divided by the intersection. By tilting one of the mirrors slightly it is possible to obtain a true front view of yourself.

The photographic negative presents an image which, as photographers well know, is reversed; however, a print from this negative is an image of true appear-Inasmuch as subjects generally are acquainted with their appearance as seen in a mirror, is it not possible that some of the dissatisfaction expressed by persons with the proofs submitted by the photographer is due to this fact? Photographs made by good portrait photographers generally more than do justice to the subject, because the latter has been caught with an interesting expression after being posed to advantage. However, complaint of the proofs is not uncommon, notwithstanding the fact that good photography is truthful as to general features.

The foregoing is a simple though interesting fact of everyday importance, and may be made use of by the photographer. In Fig. 2 is a simple arrangement shown for the purpose of illustration. By manipulating the two mirrors it is easy to determine the arrangement which best suits the purpose, if we desire to make it possible to see ourselves as we really are.

IRON PRINTING PROCESSES

The Ferro-prussiate Process

F the many printing papers which have been introduced few have stood the test of time so well as the ferro-prussiate. Engineering draftsmen

and the like owe a debt of gratitude to Sir John Herschel for discovering the "blue-print" process which enables them to take copies from tracings and negatives with maximum speed and at minimum cost.



In view of the fact that a roll of the sensitized paper 30 feet by 30 inches can be purchased for about 40 cents, little is gained by coating the paper one-self. However, for the benefit of those who do not mind the trouble the following formula is given:

				Α				
		mmonium						
(green) Citric aci	_							100 gr.
Citric aci	d							20 gr.
Water .				•	٠	•		1 oz.
				В				
Potassium ferricyanide							40 gr.	
Water .		-	·					1 oz.

Mix in equal parts, bottle, keep in the dark, and filter before use. This solution will keep good for several weeks. A still more rapid printing paper may be obtained by increasing the quantity of citric acid to 30 grains.

The sensitizer is applied with a brush or sponge. The paper is printed until the shadows bronze, and is developed by washing in cold—preferably running—water

Underexposure. There is no satisfactory remedy for this, although hot water is sometimes used.

Overexposure. This is an advantage, provided the negative is strong. Dissolve 20 grains of bichromate of potash in 20 ounces of water and flood the print with it. A fine deep blue is obtained. The bichromate intensifies the print by what is generally known as partial substitution, and also clears the white portions of ground from the blue tinge.

Nearly all the large photo-printing firms put their blue-prints through the bichromate bath first, after which they are, of course, washed as usual.

Alterations or titles may be added in white lines on blue-prints by means of this solution.—Potass. oxalate, 75 grains per ounce.

The Ferro-gallic Process

This process is for line drawings. It gives a positive from a positive in ink-colored lines on a dull white ground. It is essential that the paper to be coated is smooth and hard. The harder the

better, as if the iron salts penetrate to the body of the paper no washing or any other treatment will get them out in development.

A formula for the coating is as follows:

		Α				
Gum arabic						40 gr.
Warm water	٠	•	•	•	٠	1 oz.
		В				
Tartaric acid						20 gr.
Ferric sulphate	•		•	•	•	40 gr.
Water	•	•	•	•	•	75 gr.
water	٠	•	٠	•	•	1 oz.

Mix the two solutions in equal parts. If kept in a cool, dark place it will keep for weeks.

The developer is alum and gallic acid, 1 part of each. Water, 80 parts.

In cases of underexposure the ground can be made much whiter by careful application of dilute sulphuric acid. It should be noted, however, that should any of this touch the image it is at once obliterated.

Ferro-gallic Water-bath Process

The sensitizer for this paper seldom varies much from that of acid-bath gallic, which it really is. The only difference is that while with the latter we have the developer separate, in the water-bath method the developer is attached to the surface of the paper. This is effected by the simple process of rubbing the dry and finely powdered gallic acid evenly over the sensitive coating.

On a commercial scale it is done by a machine called a scrubber, the chief feature of which consists of two heavy irons padded with thick felt. These, by a circular motion, rub on the gallic acid while the paper is being wound through the scrubber on a revolving iron drum.

The machine is fed with acid through an aperture at the top, and to protect the health of the operator and, incidentally, to avoid damage to any coating solutions in the vicinity, the upper portion of the machine is enclosed by means of glass framing, so that the little clouds of acid thrown up by the scrubbing pads shall not escape. For those who wish to "water-bath" their own paper at home, a strip of felt nailed on to a wood support, or better still, a worn-out brush, will be found to provide a fairly serviceable scrubber.

In view of the fact that the light takes longer to penetrate the sensitive coating, owing, of course, to the layer of acid, water-bath paper generally requires about one-third more exposure than would be given in the case of acid bath.

The Sepia Process

This gives a copy in white lines on a brown ground from an ordinary tracing. Sepia paper is chiefly used now in cases where the tracing is dirty or damaged, as it is obvious that all marks on the tracing will appear both on the negative and the subsequent positive unless "blocked out" on the negative by means of brown spirit dye.

When coating paper by the sepia method at home care should be taken to select a thin, pure, and fairly transparent raw paper. Obviously, the thinner the paper negative, the quicker can a posi-

tive be printed from it.

A formula for the sensitive coating is

as follows:

			Α				
Ferric ammonia citrate (green)							110 gr.
Water .		•	•	•	•	•	1 oz.
			В				
Citric acid							10 gr.
Water .		•	•		•		1 oz.
			С				
Silver nitr	ate						45 gr.
Water .	•	•		•	•		1 oz.
			D				
Pure gum-arabic							30 gr.
Water .							1 oz.

Equal parts, say 1 ounce of each of these solutions, are mixed as follows: D is rendered fluid on a water-bath, A and B added, and lastly C, a few drops at a time. The prints are fixed in 1 to 50 hypo and gain considerably more depth, a factor which should be allowed for.

The True-to-scale Reproduction Process

One of the chief difficulties which used to beset the photo-printer was shrinkage of prints during development. In cases where tracings had been made to scale and subsequent copies taken it was found that the latter shrank to such a degree as to render it impossible to work accurately from them. This difficulty was surmounted to a large extent by giving the exact figure for each individual measurement, a method which involved considerable expenditure of time.

Numerous experiments were made by shrinking raw paper prior to coating, but this only complicated the problem, for it was found that the coated paper when developed shrank again, sometimes with the grain and sometimes not.

It soon became obvious that the ideal method must be a dry process rendering shrinkage almost impossible, and allowing a varied number of prints to be taken from the single impression.

In view of the fact that True-to-Scale embraces both these advantages, it is not surprising that it speedily became the leading process for line work, though its unsuitability for tones must be admitted.

Chemically, the process depends on the well-known fact that ferricyanide of potassium plus ferrous sulphate in solution gives a blue precipitate.

A better idea of the actions involved can be gathered by following the process

from the initial stage.

To commence with, the undermentioned coating composition should be made up: 1 pound gelatin, 2 ounces ferrous sulphate, 1 ounce glycerin, 1 ounce orange chrome (in 5 ounces water), 40 ounces water.

Measure out 30 ounces of water in an enamelled vessel and allow the gelatin to soak for at least two hours. Powder the ferrous sulphate and dissolve it in half a pint of water. When the gelatin has become soft dissolve by gentle heat or on a water-bath. Add the sulphate solution slowly with constant stirring, likewise the solution of chrome, and lastly the glycerin. The chrome is used solely for coloring, the glycerin is to prevent the gelatin drying too quickly.

Remove the warm mixture from the water-bath and filter through cloth. Then flow the mixture evenly over a sheet of glass zinc or linoleum and allow

it to set properly.

The next item is to take a ferroprussiate print of the tracing from which copies are required. It should be slightly overexposed. The print is not developed in any way, but taken straight from the printing-frame and placed face downward in even contact with the coated surface for about one minute, then peeled off by pulling from one corner. If it sticks, the gelatin is not set or else the print has been left in contact too long.

Presuming all is in order, it will be noticed that the ferric portions of the print have come away from it and have adhered to the gelatin. Also, the ferrous sulphate in the latter has reduced it to the ferrous state, hence the blue positive image which shows on the gelatin.

It will be found that this image (really insoluble prussian blue) dries the gelatin sufficiently to attract printers' ink if a roller is passed over the surface, while the other parts of the gelatin reject the ink.

By placing a piece of white paper over the inked impression, a fine clear copy can be obtained of the original tracing. If the impression is inked each time before applying the paper as many as twenty-five or thirty copies may be obtained from one impression.

It is essential that the roller shall be well charged with a hard printers' ink on the first occasion it is applied, as this makes considerable difference if a number of copies are required.—British Journal of Photography.

PHOTOGRAPHS THAT INJECT REALISM INTO THE CATALOGUE

By GILBERT P. FARRAR

CERTAIN well-known advertising manager always carries his camera with him in his travels about the country. Whenever he sees his product being used in an interesting way he takes a picture of the scene. Even when on his vacations the camera goes along. One year, when rusticating in an out-of-theway corner of the world, he found a woodsman putting his company's product to an entirely new use. A half dozen photographs of this use furnished the advertising man with ammunition that later he was able to employ to good advantage in exploiting this strange use.

As a result of this man's hobby he has a collection of photographs of very great value to him in his daily work. The collection is an inexhaustible source of copy. It enables him to furnish visual proof to back up his arguments whenever he finds it necessary to offer it.

Photographs of a product in use are playing an increasingly important part

1 Courtesy Printers' Ink.

in advertising, although as yet not many companies have made a systematic attempt to collect them. Pictures are especially valuable when picked up unceremoniously, without posing, as they then show the product as it is used every day by ordinary people.

Pictures of this kind can be used in all sorts of advertising literature. Many advertisers have found them particularly good material for the specialty catalogue. The right sort of picture lends human interest to the book. Often it tells the whole story and saves many words. What is wanted, of course, is not a mere photograph of the product itself, but rather a photograph of the product in use, with people around it showing every evidence of being satisfied with it. A picture such as this is a most convincing testimonial, and of a type that has not been overdone.

Farm advertisers have been very successful in using photographs in their catalogues. The seed and nursery people, incubator manufacturers and

others have used photographs freely and have found them a most dependable selling medium. For instance, what is more appealing than an orchard scene? A tree laden to the ground with fine fruit is proof enough that the nursery's stock grows. Such a photograph pleads strongly to our instinctive love for the out-of-doors. Lively work scenes in a catalogue in which the product appears to be doing its part will always take hold of the reader.

Farmers Attracted by Illustrations

Farmers are especially partial to pictures. In reading an incubator catalogue, for example, they like to see photographs of a proud poultry man feeding his flocks or of any other bainyard scene relating to the subject in hand. Such pictures give them a quick and definite idea of what other farmers

have accomplished.

There is a lot of psychology in the situation. It is a well-known fact that many farmers are rather humble about their calling. H. H. Johnson, the incubator man, says that "they seem to have a feeling that people in every other line of work are above them." For this reason it is well not to get a high-falutin' touch into the farm catalogue. All it needs is simplicity, clearness and sincerity. Mr. Johnson, for instance, makes no attempt to get out a polished catalogue. From the standpoint of the expert the book may have many defects, he says, but the The book is farmer seems to like it. filled with photos. There are one or two on nearly every page. These pictures show homely farm scenes and prove that the average successful user of an Old Trusty incubator and brooder is just an ordinary person and apparently has no qualifications that the reader does not possess. There is where the psychology comes in, or if you dislike that professional word, let us say it is where the shrewd sales sense comes in. You can sell people a product by showing them pictures of other people contentedly using that product. That is the sum and substance of the argument for photographs in catalogues.

Right now the subject has a timely

interest. Since it is necessary to continue to save paper, it becomes obligatory that all extravagant catalogue methods be eliminated and at the same time that the sales effectiveness of the book be increased, where possible. In this program photographs of the product in use can play a part.

In preparing the pictures, however, for the catalogue, there are certain principles that should be observed. For the majority of propositions the plain, homely photograph, selected without any consideration of its selling value, will not suffice. Where there is plenty of life in the picture and where people (not models) are working around the product, art work is not so important. But where the product is static and there is no action in the picture, technic becomes vitally important.

Some catalogue pictures that are gems in the collections of engravers and printers are really very poor salesmen—not because they are not well printed; not because they are not all that could be desired from the retoucher's standpoint, but because they don't show the goods as the buyer would like to see them.

I once knew a man who insisted strenuously on printing some of his machine cuts in a lead gray color. This man knew his market and he told me that while black ink would look much better from his printer's viewpoint, it would be a waste of money to show his machine as being black to a trade that was demanding a lead-colored product.

It takes more than a photographer to take good catalogue pictures. It requires

a salesman.

Just as a good advertising man looks for talking points to put into his copy, he should look for selling points to get into his pictures.

The big part in getting a good picture is the staging—getting a selling view,

instead of just a view.

The next thing is to get life into a catalogue picture. The weakness of many catalogues is their flatness.

I do not mean that we must use a live model in every picture. What I really mean is to get interesting contrast.

Fig. 1 is a very good example of an interesting picture. It is selling fences.

ecessary to conbecomes obligagant catalogue ind at the same ctiveness of the e possible. In

ures, however, e certain prinoserved. For ons the plain, cted without selling value, re is plenty of e people (not the product, But where

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If the fence were black and photographed from the same point as this picture is now taken there wouldn't have been much sales value in the picture. But if the fence had been black I should have changed the point from which the photograph was taken. I would have shifted around until I got the black fence mostly against the blue sky, and as blue photographs white the contrast would have been sharp black against white.

The fence is white against a dark back-

have done if the fence had been black?

"An accident, perhaps," I hear you

Maybe so. But what would we

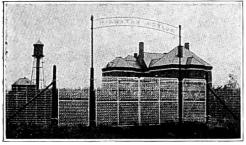


FIG. 1.-GOOD CONTRAST AFFORDED BY SHOWING THE WHITE FENCE AGAINST A DARK BACKGROUND

If the house in the picture were red and the fence yellow I would shift around until all the fence was against the sky, because both red and yellowor colors containing a majority of the elements of these colors in their make-up photograph black.

There is nothing quite so interesting as contrast in a picture and there is nothing more valuable to remember, especially when taking outdoor pictures than how the primary colors photograph. Blue is the only one of the three primary colors that photographs white.

When showing a group of products it is excellent judgment to arrange them so that there is a good break in the contrast between various products wherever possible.

The next thing to consider is action sales action. While not taken from a catalogue, Fig. 2 represents sales action. In other words, it is not a stiff picture. It is not done according to set rules. The buns are arranged naturally—just



FIG. 2.—NATURALNESS IN ARRANGING THE ARTICLES TO BE PHOTOGRAPHED

as the reader has probably seen buns arranged on his own table a number of times.

There is no live model in Fig. 3, but there is a lot of lively interest in the arrangement of the elements of this pic-There is suggested action. reader can see himself standing before the trunk and bag with all of his packing problems solved. Beyond doubt a trunk and bag salesman was the directing genius behind the picture.

Good catalogue pictures depend on a good director—a salesman who knows how to stage a picture with a sales appeal.

You don't need many words to drive home the element of strength as it is pictured in Fig. 4. The man who staged this picture knew that the possible customer would want to know whether the fence was strong, and if so, why the man



Fig. 3.—Action in an advertising picture well

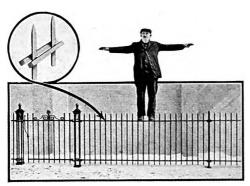


FIG. 4.—THE PHOTOGRAPHER HAS BEEN SUCCESSFUL IN VISUAL PROOF THAT THE FENCE IS STRONG

(and he is not a very small man) standing on the center of a section without any sign of the section sagging, shows that the fence is strong. The active insert shows the section which shows why the fence is strong.

Madame's foot-rest certainly adds interest to the shoes in Fig. 5. For a shoe catalogue there are many other similar backgrounds that could be made and run in cycles throughout the catalogue. Fig. 5, however, is a suggestion taken from an advertisement rather than a catalogue.

Perhaps the advertising does not always have an allowance for making up a series of backgrounds. Then it is best to have one lengthwise panel made of a single background and have pictures of the product inserted on various places of this one background when the individual cuts are made.

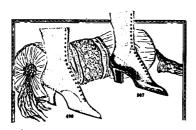


FIG. 5.—EFFECTIVE USE OF BACKGROUND TO SET OFF

I once handled a monument catalogue where a large portion of the monuments were photographed where they were made rather than where they were finally erected. As they stood in the original pictures there was no local color—not the proper atmosphere.

That was a time when I used the single background for all the cuts. In only two of the many pictures used was it possible to detect that the background was the same. These are shown as Figs. 6 and 7. Notice the small tombstones in the background of each.

Of course, all of the specially painted background was several times longer than the portion shown here. But every picture had some part of the background that was in some part of some other complete catalogue as used. Notice that Fig. 7 does not show the opening in bushes at left. Neither does it show the bush in the semi-foreground as is shown in Fig. 6.



FIG. 6.—EFFECTIVE PAINTED BACKGROUND WHERE NATURAL SETTING WAS NOT AFFORDED

The single background is an element to think about when economy is the watchword and added sales atmosphere is something desired.

When we get a good picture for a catalogue we should be careful not to spoil its naturalness with too much retouching.

For mechanical subjects retouching is necessary, but many catalogue pictures are poorly staged and then the advertising man tries to make up for the poor work of the photographer by the means of elaborate retouching.

A real photographer who knows how to handle his lights and shadows may cost more than the man who is an average photographer, but the good photographer's pictures will save you money and time on retouching. And best of all was no local color sphere. when I used the all the cuts. In , oictures used was t the background re shown as Figs. mall tombstones pecially painted I times longer ere. But every the background

each. of some other d. Notice that he opening in es it show the ıd as is shown

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FIG. 7.-SAME BACKGROUND USED AS IN FIG. 6

he will save you the naturalness that is an effective salesman.

When it comes to making the halftone cut I am much in favor of the silhouette halftone for products. Their irregular shape is interesting-more interesting than the square halftone.

The circle and the irregular shape of the man with arms outstretched in Fig. 4 lend a great deal of attention value to this picture.

For outdoor scenes, where there is foliage, square-finish halftone is usually better because the small details of the foliage are "held" better and do not require so much fine tooling on the small

When you are cataloguing a white product it is almost imperative that you use a black background. Don't be afraid to use this treatment for your product. However, be very careful about including the text on this black backgi ound.

Don't be afraid of using line cuts. They have real merit if they are natural. Look through a Sears-Roebuck catalogue and see the extensive use of line cuts. But also notice their naturalness.

In any picture naturalness is a big sales factor. The trouble with most line cuts is that they are made from a drawing and the artist who made the drawing has an imagination that is better than the goods.

The minute your prospect says, "That's too good to be true," your catalogue's sales ability falls to zero. It also falls to zero when your line drawings are cheaply made and the goods do not look worth the price.

To insure naturalness, stage your pictures and get a sales-making photograph; then, if you have to use line cuts, have your engraver make a silver print of the photograph and have your pen-andink artist draw over this silver printgetting all the details of the photograph into variations of the thickness of the lines. Then bleach the silver print and make your line cut. If you think that some shading is necessary further to enhance the naturalness of your picture, use some of Ben Day screen here and there in making the cut.

Ask your engraver about silver prints and the Ben Day method and you will probably find ways and means to do something distinctive, mechanically, on your next catalogue.

But the big thing in catalogue pictures is staging the picture—seeing the selling points, putting emphasis on those in the picture and keeping the emphasis there in the handling of the action, the atmosphere and the making of the cut.

CONTRASTS AND SUBORDINATION

By "PROFESSIONAL"

S an aid toward "Concentration of Interest" in portraiture, contrasts and subordination are much employed, both in a separate and in a collective sense. In explaining, we will try to use them collectively.

The extent to which contrasts can be employed, and yet not be overdone, is

largely a matter of the character of the lighting itself. The stronger the light the stronger is the shadow cast, and consequently the greater will be the contrast. If the law of balance in the portrait be not upset by the use of contrasts, it is permissible to employ this aid to almost any extent, of course taking care that it does not violate other necessary and vital

principles of art.

If these contrasts are brought into the face of the figure itself, then it may not be amiss to cite certain facts for the guidance of the photographer, which, if carefully followed, will prevent his overdoing matters, thus ruining what might otherwise have been very pleasing. Because your composition needs contrasts to draw the eye unconsciously to the point of interest, it by no means follows that it needs an over-abundance of it. Correct subordination of distracting things to their proper position of attractiveness lessens the necessity of increase of contrasts; look after the former before doing much, if any, of the latter. By this method you are less liable to get your pictures out of balance, which would in that case be very hard to restore, and would be attended with much trouble, even if successful in the end.

It would be well to keep this thought constantly in mind: Increase the contrast no more than is absolutely necessary to effect the result; anything more is liable to work out to the injury of the whole.

In effecting contrast in the face, whether done in the lighting, dark room, or later in other processes of the work, bear in mind that the face must in all cases represent the texture of the flesh, and the planes of the face in their proper

values, in the finished print.

It is generally considered among all artists that Rembrandt excelled all others in the handling of light and shade, and in the knowledge he possessed in selecting that light most suitable to show the character and individuality of his patrons. In this respect he remains the master of all time. The average student of photography, as well as his more experienced and ambitious brother, in taking him for his patron saint, often seeks to gauge his strong effects of light and shade from the reproductions of Rembrandt, where there seem to be even more contrasts, at times, than he thinks he is obtaining in his photographs. is a wrong conception of Rembrandt's pictures and even of those which the photographer thinks he is following in

his method of lighting. Rembrandt never meant to convey blank lights and inky shadows, and in good reproduction these never appear. They are strong in their contrasts in many cases, but will be found to excel in quality, texture, and in proper representation of the various planes of the face, both in the lights and in the luminosity of the deepest shadows. This is the essence of the beauty of these pictures, not only in the faces, but in all

other parts of the paintings.

The strong lights and shadows which we might employ are safe for us, if these same cardinal features are carried out in photographic portraiture—i. e., if the lights and shadows of the faces and draperies of the negative permit representation of the texture of these respective parts with the proper values of one part to another, the lights to the lights, the dark to the dark, and the lights to the darks. In a portrait it would be practically impossible to do this and not preserve the planes or formation of the various parts of the face to each other. This preservation of texture and planes would be difficult if the face were too strongly lighted, hence the necessity of seeing that proper subordination of less important things be first effected, which would in consequence make it less necessary to raise the key to obtain the contrasts desired. (The writer thinks that in the majority of cases, as the result of too strong lighting or wrong development, the contrasts are too marked, rather than otherwise. They must be reduced by some of the various methods employed, if it be impossible to remake the negative.)

When the picture is too flat, lacking interest on that account, then the building up of these parts on the negative can be done by local intensification, by other methods of preparing the negative, or by judicious printing. Whenever the negative needs reducing or intensifying the writer has found it to be a good plan to make two straight prints from it, laying one of them on a cardboard, covering it with a plain glass, and painting on the glass over it until the desired results are obtained, or doing it direct on the print itself, using the other print as a guide in both instances. The effect of reducing

Rembrandt ank lights and l reproduction are strong in 🕠 es, but will be exture, and in the various he lights and est shadows. auty of these es, but in all

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"THE HEAVENS DECLARE THE GLORY OF GOD."

BY FRANCIS O. LIBBY, PORTLAND, ME.

or intensifying can be thus seen before the negative is doctored at all, and consequently done at a later date with more While it would be much judgment. better to make the negative over again, as a time-saving and much more satis--factory method, in cases where this is impossible, very fair results can, at times, be obtained in this way.

It, however, often happens that it is desirable to draw attention to the face by contrasts, irrespective of the face or figure, but at some adjacent part thereto, and frequently, also, to serve a double purpose of restoring balance at the same time. If this necessity becomes apparent while arranging the subject, the end may easily be accomplished by throwing a light or shadow on the background or figure, as the case may be, screening the same from those other parts which it might affect. If the need of this contrast becomes apparent, only after exposure of the plate, it may be obtained by manipulation in the dark room. If it cannot well be done, either under the light or in the dark room, the finished and dried negative is still susceptible to treatment

by which it may be accomplished. As various methods of work will probably be considered under the general subject of background treatment, to fit special cases, the principles of which could be applied in this case, the writer will not dwell further upon it at this time than to say that this lightening or darkening of certain parts to obtain the desired local contrasts is possible and most likely familiar to many of his readers.

In striving for contrast, however, after its necessity has become apparent, do not fail to exercise moderation, and see that texture, values and balance are preserved whether it be in raising or reducing the density of the negative at these points.

In subordination you may find it advisable, for instance, to reduce a chalky neck. If you get it too dark you lose color quality of the individual. You may, however, retain texture in showing that it is a neck, but it would be out of key in being the neck of a mulatto; the values of one part of the neck to another will be fairly well retained, but otherwise lost, and balance of light to light be lost.

(To be continued)



"THE FAIRY NIGHT"

BY FRANCIS O. LIBBY

PORTLAND, ME,





"LOMBARDY POPLARS" BY FRANCIS O. LIBBY PORTLAND, ME.

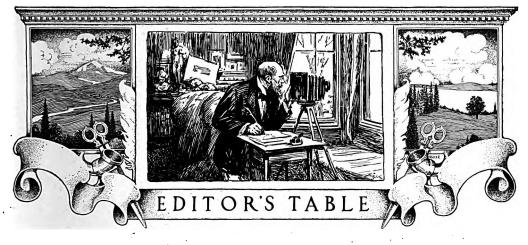






"THE SPIRIT OF THE WINDS"
BY FRANCIS O. LIBBY
PORTLAND, ME.





ON DISPLAYS

HE quality and the amount of your show or exhibition work depend as much on your own individual taste, attainments, and power as upon your environment, and upon vour clientele, by which we mean, of course, your customers or patrons. The refined or esthetic show work would be as out of place in a border town as would the painfully crude and literal display of the latter on Fifth Avenue. To secure the appreciation of the refined, the amount of your display cuts no figure. Indeed, if overdone in this respect, it is apt to be a handicap. A pearl or a diamond will draw the eye anywhere, but you will agree that neither will shine particularly if thrown in among a lot of imitations.

The crude show of your humble bordertown competitor shines by contrast with the traveling studio, and is entitled to its meed of praise on account of its isolated location and its obvious limitations.

It is vastly different with those living in a closer touch with the advanced taste of the day. The matter of a suitable display of work for exhibition purposes requires no little consideration or taste, and considerable expense if we desire to present our very best. Very few studios are fortunate enough to have a reserve fund of desirable work from which to evolve a suitable and thoroughly satisfactory exhibit. Pictures on

hand are usually culls, which, though often used in desperation for lack of better material, should not be used if by so doing you prejudice the really good ones in the balance of the exhibit.

Now a few words about the display in general. "Concentration," says a humorist, "is better than scatteration," and so will say all the thoughtful ones. This holds true, whether we are dealing with an outside doorway or gallery entrance show, a show upon the studio walls or at a convention. Not only do these remarks apply to the whole exhibit but to the individual parts as well.

Do not design a display that is "spotty," which you are liable to do by an unfortunate arrangement of sizes, large and small, improperly composed; or by injudiciously grouping pictures that agree well in form, but do not harmonize in depth of tone. An agreeable effect should be apparent to the eye of the beholder even when he is so far distant from the grouped exhibit as not to be able to distinguish the individual pictures; this is a very severe test for composition, but such composition is essential if it is desired to make an effective arrangement, as well as one in which the individual pictures may be closely scrutinized for excellence. arrangement is framed either as an upright or horizontal oblong, the form can be carried out in the inner grouping, as many smaller oblongs carefully arranged will form a larger one, and while the effect is a little severe it is better to use

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that principle than to break the arrangement abruptly by the unfortunate introduction of a larger form of subject, unless it be, perhaps, a proportionate oblong which, though larger, will permit its introduction, and thus mosaic in pleasantly. A few general rules can be laid down. It is safe to "mass" the different sizes each by themselves, be they large or small; in this way, if you combine them properly, they will form a harmonious part of the whole. these remarks are governed by the law of harmony rather than by the law of contrast; if you adopt the latter, execute your grouping with knowledge and judgment, always bearing in mind that the sizes must be then combined, according to the humorist's law of "scatteration. If you have saved the back numbers of your photographic journals which treat of conventions and the various exhibits, you will surely see many which can be taken as model exhibits, though none are to be copied literally.

This would not be possible; for in imitating closely another person's idea of grouping and arrangement you might not be able to complete it by relevant photographic work; hence, you might carry out the letter and entirely miss the spirit. We are inclined to think that all the masters of today do not attach the importance it deserves to a perfectly proper exhibit of their work, apparently leaving it more to chance and fortuitous accident than to careful consideration of

the exacting conditions.

The exhibit for the walls of the reception-room needs much care and thought in selection and location. Here, if it is large, the amount of your show is apt to be a handicap as well as at your studio door, and perhaps more so. See that your walls have proper tone or tint; gilt frames add a richness that other kinds do not, and will fit and embellish most any picture. For colored work it is almost imperative that gold be chosen. It is hardly necessary for me to enumerate the tones that are harmonious for frames as well as for pictures contained therein. Do not overload your photos with too massive frames, nor have the frames too near alike in size or style. Locate the principal pictures of the

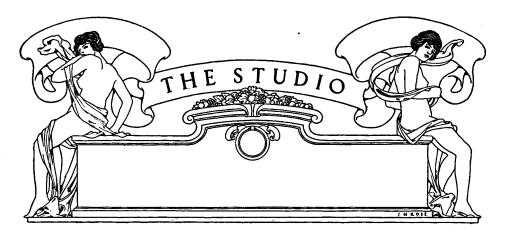
intended group centrally, and as a foil add only such frames as will not detract from the main one either by reason of size or form. Keep the group of frames well together and leave plenty of wall space for breadth and neutralizing effect. If there is one thing that can be said and that will apply to nearly all it is that too many pictures are hung or displayed in studios generally. If there is something more that applies to a great many exhibits, it is that the same pictures are permitted to hang too long without changing.

HASTE

TAKE haste slowly" seems paradoxical advice, but it contains the essence of true wisdom and is only another variation of the old saw: "The most haste is the worst speed." It implies that fussy, nervous, bustling haste is as perilous as it is unnecessary. There are many men who cannot see this, and who imagine that energy and push in business can only be exhibited by fussing and bustling, and that a person who takes things quietly and easily cannot be a smart business man. result of it is that employers who have got this fallacy into their heads are always causing friction and vexation in their establishments. It is neither easy nor pleasant to be always goaded into The mind wearies and frets hurry. under the strain. Labor that would otherwise be pleasant becomes drudgery. Irritation usurps the place of amiability. Faultfinding and scolding follow. Employees feel strongly the influence of a fretful disposition. They are made unhappy and discontented by this constant unpleasantness of their employers. The whole staff of a business house may be put into a periodical state of ferment and agitation by the employer's conduct, and many a good business has been brought to the ground by persistence in such a course. Under the systematic arrangement of duties, haste is avoided. while promptitude is ensured. business goes on more smoothly, with fewer mistakes and less worry all round. There is nothing that can take the place of system to beget cheerfulness and spirit in the discharge of daily duties. place for everything and everything in its place;" "a time for everything and everything in its time," are the golden rules of business, and if carried out to the letter there is no need for fussy haste. Inattention, confusion, carelessness and slovenliness are entirely inconsistent with such order. Systematic arrangement of work or duties makes labor easy and pleasant, and neatness, promptness, thoroughness, and completeness are secured by the methodical way of doing Order, undoubtedly, secures dispatch. Methodical action will accomplish much more in a given time than slipshod bustling from one thing to another. "Finish one job before you begin another" is a piece of advice that ought to be posted up in every office or place of business of any kind; but employers ought to be the first to encourage its being carried out, by abstaining from taking men off jobs before they are completed. It only results in an appalling array of unfinished work with no good result at the end of it. By close attention to one thing at a time it is accomplished more quickly, better and more easily. "One thing at a time" will perform a greater day's work than doing, or trying to do, two or three things at a time.

We were much struck recently with an article which set forth the essential difference between "hustle and bustle." It is quite true that there is a very wide difference between the two words, when you come to think of it. Your true hustler is never a bustler. Hustler is synonymous with "push," which in its best sense is well directed. Bustle is only energy superfluously displayed in the wrong direction. Nature does not present a more consistent and concentrated mover than your hustler; his head is always one way—and that is the right way—his work going on with the regularity of a stream of flowing water. But look at the erratic course of your bustler. He is here, there and everywhere, accomplishing nothing, but generally hindering everything by too much haste. methodical hustler has always time to

look around him and ahead to see what everyone is doing and which way the world is wagging; to work out new ideas and keep pace with the times; to cut out new channels while fully securing the old. In short, he is the most busy and most leisured man you meet. He is always first to hear of a possible good thing, and it isn't his fault if he fails to grasp it. While his business engrosses him, he yet finds time to fulfil a score of functions which would fully occupy some men. He has the astuteness of age, but never grows old, because he never yields to business rust. In his dealings with his servants he never "rushes" them, but he keeps them smart. You will as soon find his books a week behind as you will his clock an hour late. And the tick, tick, tick of his establishment means money, money, money. But for your bustler-what a contrast there is! He never has time to look outside his own door to see what his competitors are about, because he fondly fancies that if he is out of the way the work must stagnate and his employees will relax their efforts. He is like a squirrel in a rotating cage, restlessly moving, but never ad-His track through a day's vancing. business is like his path through life, scattered with the records of incompleted plans and half-finished work. He has no fixed system, but a new system for every month in the year, because he bustles each one out of gear as soon as it is His establishment is strewn created. with incompleted work and unfilled orders, because he makes it a practice to hurry up the last orders to hand by taking his men off those already in progress. Any customer who comes along and demands his work in a hurry has got to have it at the expense of all previous ones. It is not long before everything gets out of gear, and then there is a general "wipe up." Overtime has to be worked, new hands engaged, faithful old hands dismissed for imagined slowness, stock is brought in recklessly, goods are packed up and sent off somehow—anyhow—so long as they get off in a hurry. No wonder the bustler wears a worried look and has not a moment to spare for the amenities of life.



PRACTICAL PAPERS ON STUDIO WORK AND METHODS

Perspective in Portraiture

In considering the subject of perspective in relation to photography there are several points which must never be lost sight of. One is that the laws of linear perspective are unvarying and incapable of any modification. Another is that a non-distorting or rectilinear lens gives absolutely correct perspective no matter how ridicular lous it may appear in the photograph, and a third is that there is no absolute standard or limit to what is usually regarded as correct perspective. Thus, as far as pictorial work is concerned, we have to satisfy an instinctive perception of what is correct, and therefore pleasing, rather than to work to any definite rules. In landscape work there is much latitude. We may make a stone the size of a brick assume the dimensions of a small boulder in the foreground of a picture, and still secure a pleasing effect, but in portraiture everyone has an intuitive sense of proportion and, according to his degree of artistic training and natural power of perception, can discern what appears to him to be an out-rage upon it. In some subjects such an unpleasant effect is apparent to the least artistic observer, as in cases where the feet of a sitting figure are pointing to the camera or where the hands are disproportionately large; but in the case of head and bust pictures there is often merely a vague sense that something is wrong and that the portrait is not a success rather than any clear idea of where the fault really is. The amount of apparent distortion is to a great extent dependent upon the pose and also upon the facial peculiarities of the sitter, and may at times be introduced with positive advantage. The portrait of a sitter with an insignificant nose may be taken from a much nearer standpoint than would usually be advisable, and yet the result would be entirely satisfactory. When the subject is a full-length figure the effect of too near a standpoint manifests itself in various ways: the hands, if in front of the figure, appear too large, while the head or feet, or both, according to the height at which the lens is placed, seem to be inclined toward the edges of the plate. This effect can

best be explained by taking an extreme instance. Let us suppose a test object comprised of a dozen busts identical in every respect, and that these are arranged in a straight line at right angles to the camera and photographed with a Hypergon lens placed with its axis opposite the center figure at such a distance that its full covering power is utilized, the angle being about 130 degrees. When we have made a negative of this we shall find we have a full-faced portrait of the center bust, and from that a graduation to almost a profile of the outermost ones. Such conditions would not, of course, occur in the studio in any degree at all approaching this case; but to a very slight degree they occur in every photograph, becoming more apparent as the distance between lens and sitter is reduced. In the late Mr. Dallmeyer's "Telephotography" there are two three-quarter-length Boudoir portraits, one taken with a 16-inch lens, which most photographers would consider quite long enough in focus, while the other is taken with a telephoto lens at about double the distance. The first picture would pass muster in the ordinary way, but when compared with the second we see that the hands are too large and that the proportions throughout are unpleasing. Another defect is the dwarfing of the background, which is apparent when there is any decided design upon it, this being made to appear too distant and altogether inadequate to the needs of the picture.

It is impossible to lay down any hard-and-fast rule for distance between lens and subject, but it may be assumed that for normal conditions six feet between lens and sitter is the minimum for bust portraits, while ten feet would be better. Twelve feet is the minimum for full lengths, and twenty is preferable. It must be remembered that the perspective obtainable from any given position is the same no matter what the focal length of the lens or size of plate may be. These simply affect the size of the image, the relative proportions remaining constant. Naturally, the worst examples of perspective occur when attempts are made to take large heads with a lens of moderate focal length, and this was exemplified in the competition for the prize

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given by Mr. Robert Crawshay for large direct portraits many years ago. This competition evoked a collection of monstrosities, which caused the public estimation of photographic portraits to sink to a very low level. Few of these pictures were taken with lenses of a greater focal length than 30 inches, and as many of the heads were actually life size the distance at which they were taken could not have been more than five feet.

A word on the use of the swing back in connection with this subject is necessary, comparatively few operators having a correct idea of the effect of the swing in portraiture, as distinguished from architectural work. In portraiture the swing is used solely to enable a large aperture to be employed, and this is always achieved at the expense of correctness of drawing; by its use the perspective is actually falsified, the picture plane being no longer at right angles to the axis of the lens, therefore great caution must be exercised, and a smaller stop used whenever possible. Some of the older portrait lenses with much curvature of field and little astigmatism are better for sitting figures than the best modern lenses, as the knees and hands come naturally into focus with the plate in its normal position. The moral of all this is that it is necessary to know the laws in order to be able to break them successfully. If you have a "physical culture' sitter, find out which particular muscle he wants emphasized, get close up to it, and give him unbounded satisfaction. A small head and a unbounded satisfaction. big biceps will here "fill the bill."—British Journal of Photography.

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Truth of Tone in Photography

A LITTLE consideration will show us that in the case of the great majority of subjects with which the camera has to deal (practically all except copies) it is perfectly impossible for the photograph to reproduce the light and shade as the eye sees it. We have, at least, the consolation that this is equally impossible in painting or drawing.

Let us consider for a moment some typical case. In a good bright print, the highest light which is possible is the plain white of the paper as seen in the diffused light in which the picture is viewed; while the deepest dark will be the "solid black" given by the printing paper in use, as seen in the same light. To get anything darker than this, we should have to cut off some of the light by which we see the picture; and this would not only darken the shadows, but it would also have the effect of making all the high-lights darker too.

Now, if we are taking an indoor portrait, it is possible our sitter may have some part of her dress at least as light as the white paper of the print; and this may be seen in as strong a light as we should use to look at the print. But at the same time there will be other parts of the dress which are as dark as the darkest parts of the print, but which, owing to the fact that the sitter is solid and not merely a flat plane like a picture, will not only be dark in color, but will also be in actual shadow.

A black object which is in shadow is, of course, very much darker than the same object not in shadow. So that although the lightest parts of the subject may, in this particular case, be no lighter than the lightest tone which we can get in the print, the deepest shadows will be very much darker than anything that can be obtained in the print, so long as this is looked at—as it must be—in a moderately good illumination.

In landscape the problem exists to quite as great an extent, although in a slightly different form. Here we may possibly find that the deepest shadows in the subject are not darker than can be got in the print, although they may be, but, on the other hand, the lights are vastly brighter. If we could cut a hole in the wall on which the picture hangs, so that we could see its brightest part against a background of distant landscape, even on a dull day the high-lights of the print would appear almost black in comparison

In this respect all the graphic arts are in much the same boat. They cannot give the light and shade in the same strength as they are seen in the actual thing portrayed. What they can do, however, is to reproduce them in the same relative proportions; and this is what is meant when it is said that a picture is true in tone. If in the original we take certain particular tones-say, for example, a part of the sky, a distant tree, a foreground high-light and a foreground shadowand we find that these reflect light in the proportion of 40, 30, 25, and 10, to keep our picture true in tone, we must have it so that it reflects light in those proportions. It may be that our highest light can only be one-fifth as bright as in the picture. Then the relative brightness of the image in the four parts referred to must be 8, 6, 5, and 2. We shall then have brought each tone down until it is only one-fifth as bright as it was in the original; but as they are still in the same proportions as they were in the original subject, the effect will be kept true.

In writing this, we do not wish to be taken as advocating such truth of tone as is in all cases a pictorial necessity. At times the photographer's picture can be improved by having the outline of the subject modified in the reproduction; and if we may depart from a slavish copy in the case of outline, it may well be contended that we are at liberty to do so in the case of gradation. It is possible to imagine cases where an alteration might be an improvement; but except by some form of local handwork it is difficult to see how it is to be altered.

The alteration in gradation which can be obtained by photographic means necessarily extends to all the gradation in the photograph, irrespective of what it may represent. We cannot, photographically, lighten the tones on some foreground high-light without lightening similar tones which represent some distant object; and a general falsification of this kind can very seldom be a pictorial advantage.

True tone rendering entails a two-fold accuracy—we must obtain a correct black and white translation of the color of the subject, and we must get the light and shade in a correct scale. The first is a matter of orthochromatism; the second of exposure, primarily, and, to a lesser degree, of development.

How far orthochromatic photography should

be practised is still a matter of opinion. It is easy to say that a perfectly faithful translation such as can be got with a panchromatic plate and a properly adjusted light filter should always be made; but the problem is not so simple as all that. We cannot ignore color contrast, as this would do: and although there are many cases in which the orthochromatic rendering scores, there are many in which the non-orthochromatic one is to be prepared.

We are for the moment more concerned with that branch of the subject which deals with the rendering of the tones of the original, apart from their color; and this turns on the exposure being correct. In fact, correct exposure has been defined, in brief, as the exposure which allows us to obtain a negative in which, in inverse form,

the gradations are correct throughout.

In most negatives, unless the error in exposure is extraordinarily large, the gradation is correct in parts; but if there is an error, the gradation can only be true in parts. For instance, if it is underexposed, it will only be in the lighter parts that the gradation is correct; in the darker parts it will be faulty. In the case of overexposure things are just the reverse; it is the darkest parts which are correctly rendered, the lighter parts being wrong. And in each case the defect is of the same character-an insufficient differentiation of the different tones. In an underexposed negative—as every photographer knows the darker parts of the subject are all too much alike; he does not get what used to be called "detail in the shadows"—a rather misleading term, by the way. In overexposure, it is the gradations in the high-lights which have closed up.

These are faults, it should be remembered, which cannot be remedied in development. We may fog an underexposed plate in some way, and so get a negative which superficially looks something like a correctly exposed one, but the print from it will show at once that it is not. The gradations in the darker parts will still be wanting. In similar fashion we may hold back an overexposed plate with bromide, until it looks only a very little more opaque than one that has been correctly exposed; but the high-lights will not be sufficiently differentiated, and in the print will look "bunged up." Hence we can realize the supreme importance of correct exposure in

tone rendering.

The part played by development in the rendering of tones has reference to what is known as the "key" of the picture; and also to the adjustment of the negative to the printing process that is to

be used with it.

For example, if we have a negative which is correctly exposed, and we develop it slightly, we get a soft result, which is suitable for enlarging and for printing on the slower gaslight papers—both processes which tend to give contrast in a print. If we develop it a little more, it will be suitable for contact printing on rapid bromide paper, or on P. O. P., or platinum; while if we develop it still further we shall get a result which will only be suitable for printing by the carbon process.

The development does not alter the *density* ratios, but only the scale. Thus if we have a negative which, lightly developed, gives us

densities which may be represented as 2, 4, and 10 and we develop it a little further we may get 3, 6, and 15; a little further still might give us 4, 8, and 20, and so on. If those figures are examined it will be seen that in each case the relationship which they bear to one another is the same. The final figure in each case is five times the first, and the intermediate one is twice the first and two-fifths of the last. Only if we could vary these relationships could we alter the tone values; and experiment has shown that this is not to be done by any of the usually practised variations in development.

This shows the supreme importance of getting the exposure right, if we are to have the tone values right also. It shows, likewise, that whether we print in a high key or in a low key, or, on the other hand, in such a way as to utilize the whole capacity of the printing paper we are employing, it cannot be said that the tones are incorrect or untrue. Some workers, the majority, in fact, like to get what is called a "plucky print; that is to say, one in which the deepest tones of all are almost as dark as the paper will give, while the highest lights are almost white.1 With correct exposure and development this gives a fine bold result. But it is neither more nor less correct than a print in which the negative has been developed less and printed more lightly, so as to give a delicate result, with pearly grays even for the deepest shadows.

These are matters for the personal taste of the photographer; but in whichever way they are manifested there is still the necessity, if the result is to look right, that the tones—that is to say, the relationship of the different lights and shades to each other—shall be true.—Photography.

Different Kinds of Photographers

To anyone interested in the photographic business, and who has been connected with it for many years, any conversation regarding photographers between salesmen is very interesting.

raphers between salesmen is very interesting. A short time ago it happened that five traveling salesmen, representing four different houses, were all at the same hotel. There is no doubt but that during the daytime each salesman is working hard for his house and himself, but when evening comes they forget all of this and enjoy a social time together. This evening they were telling of the different kinds of photographers. There are too many kinds or classes, according to their statements, for us to try to enumerate them at this time; but we were particularly interested in what they all seemed to agree upon, that in every city there were three different kinds.

¹ They must not be absolutely the one or the other, or the tones will no longer be quite true; but the difference may be so slight as to be inappreciable unless the plain white or full black is present in the margin, to reveal the difference by its contrast. This is well shown in a masked print with a white margin. There must be some very slight difference of tone between the margin and the highest lights of all, of the print will look wrong, particularly if the high-light comes right up to the margin; but the merest indication of a difference will save the situation.

First, those who were always on the job—the live wires—looking for the best that they can secure for their patrons and giving them the best work possible; men who are always on the job, who were connected with the different enterprises in their own city or town; to sum it all up you might call them the successful photographers. They have always received a fair price for their work, which gave them a profit; they always had their bank accounts and their credit was good anywhere.

Then there is another kind, who seem to think that quantity and low prices, not quality and service, count. No doubt this class of photographers make many times more pictures than the others. They may call themselves successful, because they produce so much work. They may call themselves When talking of these photographers they placed them in the class of hard workers; men who were honest, paid their bills, but whose studios were not up-to-date; the apparatus they are using is many years old and the profit they have made out of years of business is very small; they may have a home, but that is about all. They have always catered to the bargain class of people. Their motto has been "quantity and cheapness." Possibly they themselves think they have been successful, but in proportion to the hours they have put in in their studios the results are very small indeed.

The third class, and this class seem to be quite large, as you will find them in all cities and they are simply nothing more then fillers. They haven't the ambition to make the best photographs and secure a high price, neither have they the ambition to make them in quantities at bar-gain prices. They simply remain where they are, doing what work happens to come their way, and, as one man stated, hating to see customers come into their studios for fear they will have to get up out of their easy chairs and lay down their pipes or cigars and wait on them. No ambition, no desire to increase their business, but they are just satisfied to drift along from day to day, always complaining about business, about the cost of supplies, high rents, as well as the high prices of everything, else. They seem to be men without ambition, simply failures. Good hearted, pleasant, honest, they will pay their bills if they have the money, but nothing worries them. They think, and in many cases actually believe, that all their trouble is with somebody else, and cannot understand why they have such hard luck. It is impossible to make them realize that they themselves are to blame for everything and if they only had the ambition to go ahead every one with whom they are dealing, whether it is the supply house or their customers, would help them all they possibly could.—Ohio Photo News.

A Minute with the Ad Man

THE photographer inexperienced in advertising quite often starts off from the wrong side of the

He is so interested in what he wishes the advertisement to do for the studio that he entirely overlooks the prospective customer's side of the question.

A person reading your advertisement, but who

has never seen your studio, will subconsciously form a mental image of it from the appearance of your advertisement, so you see you must watch your printer carefully, as he can do much to either make or mar your efforts.

A neat, well-arranged advertisement conveys the impression of a neat and orderly establishment, where attention is paid to details. On the other hand, if you have allowed the printer to run a cut upside down or not set true with the borders, and to use half a dozen different styles and sizes of type you create the impression of carelessness and slovenly methods generally.

Attempting to be funny in your advertising is just about as dangerous as giving a couple of youngsters a box of matches and then telling them to go and play in the clothes closet

If a stranger should enter your studio you wouldn't start business by making a funny face at him or telling him your latest good story, so beware of the so-called comic cuts, and other

attempts humorous or facetious.

It is a wise man who first remarked "every knock is a boost," and so why help advertise your competitors by referring to them either directly or indirectly? Such references only too frequently start a train of thought which leads the prospective customer to your competitor instead of to you.

Avoid the use of superlatives; your studio may be the largest; you may have the finest stock and the lowest prices, and your studio service may be perfection—but be a bit conservative; nobody cares much for or believes in the

boaster or the braggart.

Consult with the printer as to the setting up of your advertisement; see that he shows you a proof" and go over it carefully to correct errors; if you don't like the way your printer has set up your advertisement tell him so, and between you, you can usually improve it.

Tell your story simply, and avoid a confusion of ideas; if you are using a small space don't crowd it with type; the white space around the type matter often has the dominant eye-arresting

quality.

Lastly: Tell only the truth—and make no promise you can not fulfill to the letter.-Photo. Digest.

The Photographers' Skylight

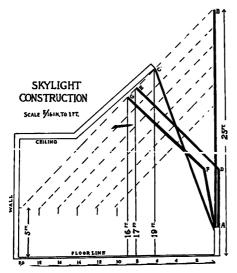
THE matter of skylight construction for a photographic studio has always been debatable, and anyone seeking information on this subject experiences difficulty in obtaining advice which

might be considered as authoritative.

The principles governing skylight construction are, however, extremely simple, and it was on account of numerous requests for information on this subject that we published some years ago in Studio Light an explanation relating to the construction of a single-slant skylight. Many construction of a single-slant skylight. photographers are, however, so situated that a single-slant light does not meet their requirements; it therefore occurs to us that a supplementary article explaining the principles involved in the construction of skylights of various types will be of interest.

The accompanying diagram represents a cross-

section of a photographic studio 20 feet wide and 12 feet high. In this diagram the skylight comes within three feet of the floor, and the vertical line A, B represents the simplest form of skylight construction. This is the form of "skylight" usually available when making home portraits in private houses. The dotted lines represent the general direction from which light is assumed to fall when entering any room through either a window or skylight. A glance at the diagram will show that if a vertical light were to be built for a room twenty feet wide, it would necessitate extreme height in order to secure illumination for the entire width of the room. Light falling in a straight line at an angle of 45 degrees from the top of the window should strike the opposite wall at about five feet from the floor to fully illuminate the room. In home-portrait work, where the height of an ordinary window does not exceed eight or nine feet, it



would be necessary to work very close to the window, and the taking of large groups would not be practicable even in a large-sized room. A vertical light for a room twenty feet wide should be twenty-five feet high. In an ordinary studio the construction of a light of this description would be out of the question; but for the photographer who can erect a studio building, where a room of spacious proportions and stately height could be built, a vertical light constructed of plate glass with leaded sash would be the last word in efficiency and impressiveness. Photographers who have the opportunity to build a light of this description are, however, so very few that we merely mention this in passing as the most simple form of light.

In considering the next form, commonly known as the "single-slant light," which is represented by the line A, C, we have a sash placed at an angle of 70 degrees. The extreme height, from the floor, at the peak for a room twenty feet wide

is nineteen feet. If a skylight is to be constructed for a room of less width the proper height can easily be determined. This diagram is drawn to a scale of three-sixteenths inch to a foot. Lay a rule on the diagram and measure the distance from the floor to a point where the dotted lines, for a room of any specified width, intersect the heavy black line. By taking the distances in inches and dividing by three-sixteenths, the result will be the height in feet. Experience has shown that for a single-slant light the best angle at which sash should be placed is 70 degrees. This for the reason that a steeper angle would necessitate an unreasonable height, and if light were placed at a lower angle there would be very considerable danger of breaking glass when moving backgrounds, head screens, etc.

The form of skylight which is perhaps in most general use is that indicated by lines A, D, E. This is what is commonly known as "top and side," and represents a vertical sidelight extending to an average height of nine feet from the floor, and a top light extending from this point at an angle of 45 degrees back far enough to intersect the dotted line representing the angle

of light for a room of any given width.

The next form of skylight, commonly known as the "hip light," is represented by the lines Λ , F, G, and is an excellent form of skylight construction, bringing, as it does, the average surface of the glass nearer to the subject. The lower sash being placed at an angle of 80 degrees, and extending to a height of nine feet from the floor, permits of working very close to the light with backgrounds and other accessories. The upper sash, running back at an angle of 45 degrees to the line of light intersection, will give illumination to the extreme width of the room. As the curtains covering the skylight are operated at the plane of the glass, this form of light permits of great concentration and accurate control. For either the form known as the "top and side" or the "hip" light the proper angle for the upper sash is 45 degrees, for the reason that in this position light strikes the glass more nearly at right angles and passes through and into the room with least deflection.

The accompanying diagram and the above explanation relate to the proper heights and angles for skylights of various types—height and angle being the only factors which afford illumination to the entire width of the room. The width for a light has nothing to do with illumination beyond the angle of light intersection. The width is merely a matter of working convenience and depends largely upon the length of the room. Where there is sufficient length to permit of operating in either direction the most advantageous position for the light is in the center of the room, and the light may advantageously occupy one-third of the whole side. With a studio of less spacious dimensions it would be advisable to leave a space of at least four to six feet at one end. The skylight may then occupy practically one-third of the remaining space; but if the room is very short it will undoubtedly be necessary to increase this proportion. —Studio Light.



The Fifteenth Annual Convention of the Professional Photographers Society of New York, February 25, 26 and 27

PRESIDENT FRED. T. LOOMIS sends us the fol-

lowing program:

Conditions at present look very favorable for a big attendance, and we are working hard for a most interesting program following out the convention idea of giving the other fellow the benefit of one's experience along with demonstrations and informed talks. In other words, a big gettogether

The first evening a get-together dinner with some stunts after it. The big banquet the second

night.

This year we expect an unusual display of pictures, from which three photographers outside of New York State will select the best twenty-five to be used for section exhibits and criticisms. The executive committee want regular pictures, not freaks made up for the occasion, but work you feel proud to deliver and receive your price.

Home portraits will be discussed by a photog-

rapher who has made good in this line.

A repeating flashlight, used successfully by one of our own members, will be used and results shown.

A commercial photographer will give a talk on how to successfully bring some extra dollars to the smaller photographers throughout the

A talk will be given by a newspaper man on advertising business in general and discuss the

customer's side of our profession.

The program would not be complete unless we heard from our "regulars,"-McDonald, Core, Beach, Mock, Hoyt, and several others.

Again a five-minute discussion will be carried through, calling on every member to tell us something new or something he does in his studio to save time, produce results, etc.

The Convention is to be held on the fourth floor of the Masonic Temple, in the Auditorium, where there are plenty of light, room and all con-

veniences for a large meeting.

Elmira is on the main line of the Erie and D. L. & W., between Buffalo and New York. It also has the Pennsylvania and Lehigh Valley R. R., and suburban trolleys, making it very accessible for a large section of the State.

Hotels Rathbun and Langwell will accommodate all.

DO NOT MISS THIS ONE BIG CONVEN-TION.

Annual Report of the Pictorial Photographers of America

THE second annual report of the Pictorial Photographers of America comes to us in a most attractive format. Clarence H. White, the President, in an interview with Henry Hoyt Moore, discusses "The Progress of Pictorial Photography," and E. R. Dickson reviews "The Year's Work."

The several reproductions of photographs included in this report were largely selected from the recent exhibitions given at the Washington Irving Gallery, New York City. This attractive report will be of unusual interest to all pictorial photographers.

The American Annual of Photography for 1919

THE American Annual of Photography for 1919, Vol. XXXIII, has just been issued and, notwithstanding the obstacles incident to the war, it does not fall behind its predecessors. In fact, in some respects, it surpasses former issues. It is replete with very interesting and instructive articles, most of them illustrated, among which the following are particularly

worth perusing:

"The Skin in Its Relation to Photographic Portraiture;" "The Equalization of Values in Negatives;" "View Finders—Good and Bad;"

"Some Film Defects and Their Cure;" "Even Toning with the Cold Hypo-alum Bath;" "Simple Method of Making Pictorial Photographs;" "A Quick Test for Hypo in Prints and Negatives;" "The Carbon Process;" "Personality in Photography;" "The Value of Clouds;" "Flat Lighting in Amateur Portraiture;" "The Camera as a Sketch-Book;" "High-speed Exposure in Portraiture;" "Bird Photography," and many others. worth perusing: many others.

There are the usual tables for which this publication has been famous for years; and a number

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of other things make this volume of value to photographers, both professional and amateur.

The most attractive feature, however, are the illustrations, some of which are unusually artistic, and among which we note: A most charac-teristic portrait by Bella Johnson, and one of a tic, and among which we note: A most characteristic portrait by Bella Johnson, and one of a full figure by Jane Recce; "The Station—A Sudden Shower," by Eleanor W. Willard; "The Open Door," by William F. Kriebel; "A Woodland Philosopher" and "A Nova Scotia Forest," both by Rudolph Eichemayer, Jr.; "The Bridge," by the late Lieut. Luke R. Vickers; "The Spider's Web," by Helen W. Cooke; "The Lure of the Stream," by James N. Doolittle; "Moonlight," by W. H. Rabe; "The Path of Gold," by Warren R. Laity; "Moorland," by James E. Paton; "The Call," by Kate Matthews; "San Diego Exposition," by D. J. Sheahan; a child portrait, by Ira D. Schwarz; "Ready to Sail," by William S. Davis; "Just a Baby's Prayer at Twilight,' for Her Daddy Over There," by Bertha M. Miller; "Good-bye, New York," by William H. Zerbe; "Cypress—Australia," by James E. Paton; "The Cecilian" and "Labour," by Louis Astrella; a boy's portrait, by W. B. Poynter; "My Lou," "Wonder Eyes," and "Smiling Dan," all portraits by Karl Tansig, illustrating an article on Artsone: "Low Tide," by C. F. Welseford. "My Lou," "Wonder Eyes," and "Smiling Dan," all portraits by Karl Tansig, illustrating an article on Artatone; "Low Tide," by C. E. Wakeford; "The Village Story Teller," by Nancy Ford Cones; "End of the Day," by F. C. Baker; "Nature Tranquil," by S. A. Schwarz; "Portrait of a Young Girl," by Fedora E. D. Brown; "Peaceful Evening," by Harry D. Williar; a woodland scene, by Edna B. Blackwood; a landscape, by Louis Goetz; an illustration, by W. H. Porterfield; "A Glimpse of Old Santa Fé," by Chas. L. Snydon; a most effective paysaze, by Tenkyu-Kwai; "The Evening Star," by Edwin Loker; "Morning in the Woods," by Thomas Carlyle; "The Hermit," by Thomas Edward Halldorsen; and, finally, a charming Edward Halldorsen; and, finally, a charming portrait, by M. Frey.

The reproductions are excellent; the advertisements numerous and helpful; the letter press first class and, altogether, the volume offers a compendium of photographic knowledge and example that is certain to be appreciated and admired by any one interested in the science or

art of photography.

"The Wellcome Exposure Record and Diary for 1919"

THE Wellcome Photographic Exposure Record and Diary for 1919 made its annual appearance early in January, as high in quality and as full of information as usual. There are the tables and formulas, as heretofore, in regard to develop-ment, intensification, reduction, printing, making lantern slides, toning in various colors and other practical procedures; temperature charts, weights and measures; pages for records and memoranda; rules for interior exposures, copying, enlarging and night photography; lists of speeds of many kinds of bromide papers, plates and films; calculations for the different hemispheres, latitudes, etc.; light values for each month, hours of the day and typical subjects, together with calendars for 1918, 1919 and 1920.

Perhaps the most useful feature is the calculator. This has been altered and improved. By

one turn of the disk, for the most frequently used plates and films and two for the others, the correct exposure can be read for all seasons, hours and subjects, not at f/8, as formerly, but at all lens openings, including f/4, f/4.5, f/6 and f/7. This new feature leaves nothing to choose between a "Wellcome" and a meter, and the former may be had for less than a quarter of the cost of the latter, not to mention the expense of

the tinting paper required by the meter.

This little book will be found invaluable by the beginner in photography, and useful alike by the amateur and professional photographer; and, once used, it will become indispensable.

Eastman Portrait Films

A RAPIDLY increasing number of photographers are using Eastman Portrait Films, because the quality of the negatives these films yield, both in portraiture and in many branches of commercial work, is superior to that they were obtaining

Eastman Portrait Films are so thin that halation is practically eliminated. This freedom from halation especially adapts them to homeportraiture, where it is often necessary to include windows or other sources of strong light in the picture. Halation prevents negatives from recording the snappy catchlights that can be seen in delicately lighted white draperies. These catchlights can be so recorded by Eastman Portrait Films that they will show in the print. The results obtained with films, when exposing for the shadow detail in subjects that show strong lights and deep shadows, can only be equalled with the best non-halation plates.

The gradation quality of the film is equal, if not superior, to that of the best plates, the grain is exceptionally fine, while they have remarkable latitude, and speed equal to that of the Seed 30 Plate. In fact, they combine qualities that are

not to be found in any one plate.

Another point, the Eastman Portrait Films are absolutely unbreakable. This is an advantage that needs no explanation. Every photographer knows what it means to break a good negative; what the advantage will be in having negatives that cannot be broken!

And with all of their advantages over plates, the Eastman Portrait Films are no more expensive than the best plates, the list prices corresponding to those of the Seed 30 Gilt Edge.

The films are extremely light in weight, but

have sufficient body to make them lie perfectly flat in the special film holders or in the film sheaths, which adapt them to the regular studio and view camera plate holders. For homeand view camera plate holders. For home-portraiture their light weight makes it possible to carry loaded film holders as readily as empty plate holders, while the film holders are slightly thinner than plate holders.

Films are about one-tenth the weight of glass plates and occupy about one-sixth the amount of space. The great convenience in weight and the space necessary for filing a great number of negatives in the studio is very apparent. Especially is this true where thousands of negatives are held for duplicate orders. We will speak later of the special advantages and methods of

filing film negatives.

Restrictions on Flashlight Powders Revoked

AUTHORITATIVE word comes through Messrs. Jas. H. Smith & Sons Co., of Chicago, that all restrictions on flashlight powders were removed from explosive regulation list, January 9, 1919, by the Bureau of Mines, Washington, D. C.

1919

Who isn't glad-Mighty glad— That New Year dawned— On a warless world-That there are no more— Lightless, heatless Meatless, wheatless— And joyless days. No more campaigns-To kill and main-The world can go back— To campaigns to-Restore and fulfill-Manufacturers to restore-Their position in business world— And fulfill demands now greater-By reason of restricted supply-During the period of the war-And the lifting of restrictions— During this period of peace— And better still-Our boys are coming back-To help production to normal. So we look for a very Happy-And prosperous New Year.

Pittsburgh Convention, March 18, 19, 20, 1919

Classification of Awards

FIRST Grand Prize, open to all photographers in United States and Canada. Gold medal. Exhibit to consist of three portraits, which must be made from 8 x 10 plates or larger. \$2.00 must accompany entry, which will pay for membership in organization for one year.

Class A, open to all photographers in the Middle Atlantic States. Three portraits to constitute exhibit, the three having highest rating. First prize, gold medal; second prize, silver medal. All prints to be from 8 x 10 plates or

Class B, open to photographers in cities of 40,000 to 100,000 inhabitants in the M. A. S. jurisdiction. First prize, silver medal; second prize, bronze. Portraits to be from 8 x 10 plates.

Class C, open to photographers in cities of 15,000 to 40,000 inhabitants in M. A. S. jurisdiction. First prize, silver medal; second prize, bronze. 8 x 10 plates or under.

Class D, open to photographers in cities under 15,000 inhabitants. First prize, silver medal; second prize, bronze.

Class E, Home Portraiture, for three best portraits not made in a studio. First prize, gold

medal; second prize, silver.

Commercial Photography, open to all photographers in M. A. S. jurisdiction for the three best pictures of commercial subjects. Contact prints. First prize, silver medal; second prize, bronze.

The Abel's Cup, a special prize offered by Abel's *Photographic Weekly* for the two best

portraits, not less than 5 x 8 inches, made entirely by an employee working in any studio in the M. A. S. jurisdiction. No entry fee.

Bulletin of Photography Prize, \$10.00 in gold for the best picture exhibited by a member of the P. A. of M. A. S. No strings tied to the award. Picture can be entered in the classes or as an exhibit.

Rules Governing Awards

Portraits may be framed or unframed. Three portraits shall constitute an exhibit, except special prizes; awards to be based on the highest rating of the three portraits. No names or identification marks to be on face of portraits. Enclose card or name and address with exhibit, specifying the class in which they are entered, which will be placed with your exhibit after they are judged and hung.

A fee of \$2.00 must accompany all exhibits for the grand prize, which carries with it a membership in the organization for one year.

Exhibitors in all other classes must be in good standing in the Association, except special classes.

Is Business Prepared?

WILL American business be as unprepared for peace as it was for war? We hope not. If we have learned our lesson, we know now that we must in time of war prepare for peace. Already English, French and even German business men are preparing.

It is useless to deceive ourselves into thinking we can easily drop back into the old trade routine. There never will be a return to before-the-war conditions. War is changing markets even as it is the old international boundary lines. New wants are developing; old customs are giving way; luxuries become necessities and necessities luxuries.

Already a new era in merchandising has begun. American business is approaching, if indeed it is not already in, its most critical period. War orders will stop coming and peace orders must take their place if the factory wheels are to keep turning at normal speed.

What are you doing to make sure that you will get those peace orders? They will not come without effort; you must earn them. You cannot reap where you have not sown. Begin now, today, this very minute, to put your house in order. At the present time your advertising matter should be going out to keep alive the goodwill you have created in the past. Your distributers, your customers, are looking to you; they must know your plans before they can make theirs. Take them into your confidence.—The Barta Press.

A Correction

In our review of "An Exhibition of Pictorial Photography," which appeared in the December number of the JOURNAL, page 558, we referred to the work of Louis Astrella, and made mention of the print "Purity." This print was made by Harold C. Bullard, of Bridgeport, Conn., who should have been given full credit.



The WORKROOM

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MAP REDUCING WITH A HAND CAMERA
FLASH-LIGHT COMPOUNDS: THEIR POINTS OF DANGER AND
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THE FOCUSSING SCREEN
INTENSIFICATION OF FLAT NEGATIVES
STUDIO FLASHES
STRIPPING NEGATIVES FOR STORAGE AS GELATIN FILMS
MODELLING IN PORTRAITS
ACID-FIXING BATHS
CLEANING OLD DAGUERREOTYPES
FOCAL LENGTH AND STOP VALUES



THE WORKROM

By the Head Operator



Selecting a Lens to Fit Your Needs

Do you work with your camera at least eight or ten feet from your subject? If not, are you getting distortion? You certainly are if you work much closer than this, whether you know it or not.

It's worth while to prove to yourself whether or not your results are the best, and it is a very simple thing to do. If you have to work close to your subject to get a good-sized three-quarter or head-and-shoulder portrait, make a negative close up in the usual way. Then without changing the position of your sitter, draw your camera back to a distance of eight or ten feet and make

another negative. Of course your second negative gives you a much smaller image than the first, but that is to be expected. Make an enlargement from the second negative, being careful to get the image the exact size of that in your first negative. A comparison of the enlargement and the contact print from the first negative will show you just how much distortion you get by working too close to your subject. The enlargement will be the most pleasing picture.

A wrong impression often prevails as to the cause of this distortion. Some photographers seem to think that it is the fault of the lensthat it is a lens imperfection, but such is not the case. All lenses, regardless of their size or focal length, will give the same perspective from the same point of view.

The confusion arises from the fact that a short-focus lens is necessary for making fulllength figures in the average small studio, say, 18 feet in length. If the same lens is used for making head-and-shoulder portraits, however, it is necessary to work so close to the subject that the results show bad perspective, or distortion, and the lens gets the blame.

It isn't the short-focus lens that is at fault. A long-focus lens at the same distance from your subject will give the same distortion. It is entirely the point of view. Obviously the remedy is to continue using as short a focus lens as is necessary for full-figure work and use as long a focus lens as the length of your studio will permit you to use for head-and-shoulder work.

For example, in your 18-foot studio you must allow for space behind the sitter and for space occupied by the camera, which will be about 5 feet. This leaves 13 feet to work in. The longest focus lens which will permit you to make a full-figure portrait of the correct size on a 5 x 7 plate is approximately 10½ inches. You are working 13 feet from your subject and the perspective is very good.

To make a head-and-shoulder portrait of good

size, say, a $2\frac{1}{2}$ -inch head on a 5 x 7 plate, your lens will be about 4 feet from your subject. This is entirely too close for the best results, but you must work this close if you have no other lens.

With a 20-inch lens you will get exactly the same size image at about 8 feet from your subject, which is twice the working distance. The perspective will be much better and the same lens may be used for heads as small as 11 inches.

If you find the perspective in your work is poor and you wish to correct it by employing a lens that will permit you to work at a greater distance from your subject, you may be at a loss as to what is the best lens for your special use.

There is a very simple rule which gives you results sufficiently accurate for practical use. Suppose you have a good lens for head-and-shoulder work but want a lens for full figures. The average standing figure is 68 inches. Suppose you wish to make standing figures about 7 inches on 8 x 10 prints. Divide 68 by 7 and the result is 95 or practically a 10 times reduction. Add 1 to the reduction figure, 10+1=11, and divide the working length of your studio, whatever it may be, say, 15 feet or 180 inches by 11, and the result, 16.3, is the greatest focal length of lens you can use. As round figures will answer for all practical purposes the fractions may be disregarded in these calculations.

The same rule applies to heads, taking 9 inches as the height of the average head. By this rule you can determine the reduction you wish to make, whether it be a head, a three-quarters or a full figure, and can quickly determine the focal length of the lens that will produce the result you wish at any given distance from lens to subject.

Suppose you wish to make a group and your studio has a width that allows you to make the group 10 feet, or 120 inches wide. You want the group to be 8 inches wide on your plate, so the reduction is $120 \div 8 = 15$. The rule says add 1, which makes the reduction figure 16. Your working distance is 15 feet, or 180 inches, and $180 \div 16 = 11$, so your lens can not have a focal length of over 11 inches to make such a group.

To find the greatest width of group that your 16-inch lens will include, divide your working distance, 180 inches, by the focal length of your lens, 16 inches, and the result 11, is the reduction figure; 11-1=10, the actual reduction. Then multiply the width of image on plate by the reduction and you have $8 \times 10 = 80$, so your 16-inch lens will only include a group 80 inches wide, working at 15 feet.

Practically any information you need regarding focal lengths and working distances can be figured by the formula given below.

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D = working distance, lens to subject

R = reduction ratio

F = focal length of lens = height or width of object

G = height or width of ground glass

Therefore, any one of the following five calculations may readily be made:

$$\begin{array}{l} D \div (R+1) = F \\ F \times (R+1) = D \\ D \div F = (R+1) \\ R \times G = S \\ S \div R = G \end{array}$$

-Studio Light.

Frost in Photography

"As the day lengthens, so the cold strengthens,"—and the photographic picture-maker intent on winter subjects must be ever on the alert for those rare and transient effects of

nature which occur during this month.

At no other time of year are the habits of vigilance and promptitude in camera-craft so needful, nor so productive of happy results. In the spring and summer, and even in autumn, there is a certain degree of permanence—or at least only a deliberate spirit of change—in outdoor affairs. What it is not convenient for us to look for one day, we may generally count on securing the next day, or even the next week. But when we want winter effects-pictures of ice and snow and frost-an opportunity accidentally missed is usually an opportunity gone forever.

In work of this class, it is not even safe to

wait until the chance serves, no matter how promptly we may set forth to take it. The most beautiful passages in the story of winter are often merely chance asides—swift glimpses between one dull hour and the next. A glance through a window-pane may show us something that is gone before we are half-way down the street. My very best pictures of winter life and scenery are certainly those which I shall never be able to show to anyone-because they were never taken. I was hurrying plates into dark slides, or donning a warmer coat, while the inspired moment was fleeting irrevocably away.

This habit of not being ready when opportunities for good work present themselves, is a very real obstacle to success at all times of year, but never so much as at the present. To keep a loaded gun in the house is a crime; but everloaded dark slides are a necessity to the photographer who takes his art seriously. In the old days, when apparatus was faulty and dry plates were prone to attract all the dust and moisture from the four heavens, there was something to be said in favor of filling slides and magazines only at the moment they were required.

Pictures of outdoor life of strong human interest under winter conditions in town or country, are always peculiarly attractive, and no occasion for securing them should be lost. But the subtle and fascinating qualities of pure lansdcape will even more strongly appeal to the advanced worker at this time. Effects of snow and frost

are fairly common in our Februaries, and the beautiful fairy fabric, which the hoar-frost weaves in hedgerow and woodland glade, can be met with at frequent intervals throughout this month and the next. Nothing, however, is so difficult to render on a photographic plate as a scene in nature where all-earth, bushes, trees alikeare sheathed in the downy white of the hoarfrost. In such a subject there is nothing approximating to a dark tone anywhere. The whole picture is made up of varying intensities of white, delicately mingled with grays that are no more than shadows of shadows. Generally the lowest tone in the picture is the sky itself-an odd sort of inversion that lends a mystery and novelty to the work not to be described in any words.

Now, all this is absolutely unpaintable. No lead-pencil, or etching-tool, or silver-point can reproduce one-thousandth part of its intricate frailty. The camera alone is able to cope with it and then only when the camera-man himself brings all his skill, his vigilance, his judgment, to bear on the task. For though the hoar-frost works its miracles on our country-side with commendable frequency, there are only one or two minutes in each day when the exposure of a plate is possible. It is always foggy weather at these times, but there comes a moment when the mist parts and the first wan sun-ray struggles through. That is the chance for the man at the shutter. Tarry but an instant, and the light is That is the chance for the man at the gone—the fog is down again thicker than ever— there is nothing for it but to pack up and go home. Wait a while in the hope that the highest tree-tops may clear; and the full midday sun may come bursting out—all the fairy-like tracery of twig and branch will vanish as you gaze; or a sudden flaw of wind may sweep through the wood, and send the whole fabric cascading to earth with a sound as of the fall of a myriad tinkling crystals. And that sound, entrancing though it is, means the end of our frost-photography for the day.

I think I have tried every speed and species of plate, and every duration of exposure and manner of after-treatment, for this kind of work. But perhaps the following method is best of all. The object, of course, is to get a thin, clear negative full of delicate detail, with a wide range of high tones. Anything approaching to full density is fatal in a negative of frost-scenery, because it is next to impossible to secure in the print all diversity of high lights without exaggerating the shadows and so stultifying the whole

effect.

I use a backed plate of the highest speed and stop the lens right down, giving an adequate, but never excessive, exposure. These plates are developed until all detail is well out, and the image begins faintly to show through the film. The negative is then drained, and gently lowered into a dish of plain water, where it is left all night, fixation taking place in the morning, or when convenient.

Pictures of frost and snow are always better printed on a warm-toned paper. The subjects in themselves suggest quite enough frigidity to the eye, without needing accentuation from the color of the print. Moreover, faint detail in high lights seems to be more thoroughly brought out in papers of warm tone than in those giving purely gray effects.

Copying to Scale

Sooner or later every photographer, amateur and professional, wishes to copy a map, plan, engraving, etc., to a certain scale as exactly as possible—perhaps the commonest case of all is copying the original half (linear) size. But first a word about sizes to prevent the risk of confu-Suppose the original to be 8 x 6 inches. Half-linear would be half 8 x half 6, i. e., 4 x 3; but as an 8 x 6 print can be cut up into four portions, each 4 x 3, the 4 x 3 copy is half *linear* but quarter area. Similarly if we divide each of the 8 x 6 inch sides into three equal parts we can cut up our original into nine equal portions, each such portion being one-third linear of the original but one-ninth area. Just so much to prevent confusion.

Hereinafter let it be understood that our scale, ratio, relative size or term it as you please, refers to linear dimensions, or, as it is often called, "diameters;" but linear is the safer term to

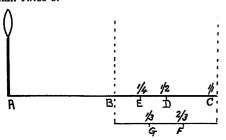
employ.

There are always at least two ways of doing a thing, viz., the slow and roundabout trial and error method and the simple and quick, rational method.

Suppose we want to copy a map one-third original size. We can take a piece of newspaper nine inches long. Pin this over the original and dodge about with the lens and camera until by good luck we find a position where the nine-inch long piece is exactly three inches on the focussing . screen, and at the same moment is in sharp focus.

As the old cookery books say, there is "another way." This means just a little trouble at the outset to make a scale, but this once done the rest is quick and easy work every time.

First of all, let the reader be quite clear on one point, viz., that there is a limit to the scale or ratio set by the relative length of the camera bellows and focal length of the lens. It seems needful to mention this fact, for quite recently I had a query from an old hand as to why he could not copy (i. e., enlarge in the camera) double size with a 20-inch bellows camera and an 8-inch focus lens, for, said he, "20 is more than twice 8."



Let me answer his query again, as it may serve to clear the minds of others. The question is, "What degree can I enlarge with a 20-inch bellows and an 8-inch lens?" From 20 subtract 8, leaving 12. Now divide 12 by 8, getting 1½.

That is your answer. You can with these tools copy your original any size up to but not exceeding 1½ times linear. Then if your original be 6×4 your limit is 9×6 .

But I now take it for granted that the reader knows that for copying "same size" the bellows length must be not less than double the focal

length of the camera.

Let us now proceed to make a focussing scale for some useful proportion up to same size, e. g.,

 $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, $\frac{2}{3}$.

As usual there are two ways, *i. e.*, to mark the edge of the camera (or the different extensors, as I think better) and to mark the distances on a square lath of wood.

Such a square lath or rod having four sides enables us to scale it for four different lenses. It is but the work of a moment to bring one end of the rod flush with the front of the camera and

then back out till the focussing screen is opposite the selected mark.

First focus the lens on the most distant object in view, e. g., a chimney, tree, etc.—anything will do provided it is distant at least 100 times the focal length of the lens and the farther off the better. Suppose A to indicate the front (lens board) of the camera and B the position of the focussing screen for a very distant object. We now focus the lens on a foot rule and get the image life size, i. e., same size on the ground glass. Suppose C is this position of the ground glass. The rest is easy. Find the point D that is midway between B and C and mark it $\frac{1}{2}$. Find the point E midway between B and E and mark it $\frac{1}{2}$. Next divide B C into three equal parts at G and F, marking the division G next B as $\frac{1}{3}$ and the other division F next C as $\frac{2}{3}$.

Suppose now, with this lens and marked rod, we wish to copy one-third original linear size. It is but the work of a moment to bring A up to the camera front and back out the focussing screen to $G_{\frac{1}{3}}$ and clamp it. To get a rough idea of the distance of the lens from the original we take three times A G. But we must regard the lens to focussing screen now as a fixture and focus by moving the camera and lens forward or back-

ward as the case may require.

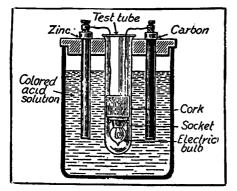
There is one other little point in this connection deserving mention, now that the camera is being so much used for nature study, where it is desired to get enlarged negatives up to, let us say, ten times magnification. This is the kind of question that is constantly being asked just now: "I have an old camera with 18-inch bellows, which I want to rig up as a vertical camera for nature study. What focal length of lens is required to give me a ten times linear magnification?" To 10 add 1, getting 11. Divide the camera length 18 by "ratio plus one," i. e., 11. This gives us 1 7-11 inches focal length. But this is not a stock number. If, however, we get a 1½ micro objective (which can be had for about \$3.75) we shall with 18-inch bellows get rather more than 10 diameters. If we subtract $1\frac{1}{2}$ from 18, we get $16\frac{1}{2}$, and, dividing this by $1\frac{1}{2}$, we get 11 diameters or the limit of magnification.

All this may sound rather dry if you do not happen to be interested in copying just now, but one day you will want it, and want it badly, Moral: Make a note and keep it handy.

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A Novel Lamp for Photographic Laboratories

A DEVICE as simple as it is ingenious, for furnishing the necessary red light in a photographer's dark-room, consists of a small electric light operated by a single-cell battery, in which the solution employed consists of bichromate of potassium and sulphuric acid. 180 grains of bichromate are dissolved in a liter of water and 504 grains of sulphuric acid are then slowly added. The liquid thus obtained is placed in an openmouthed, transparent glass vessel—one of the jars used for a Lechanche battery, for example—filling it to within two or three inches of the top.



AN INGENIOUS ELECTRIC LAMP FOR THE DARK-ROOM

The jar is covered with a plate or stopper pierced by three holes, as shown in the accompanying diagram, for which we are endebted to La Science et la Vie (Paris). The two smaller holes hold rods of zinc and graphite respectively, the zinc being preferably amalgamated. The central hole is of such diameter as to support a test-tube, which, like the rods of zinc and of carbon, extends into the liquid below. the test-tube is placed a small electric bulb of 2 to 2½ volts which is held in position by a cork into which its socket is fastened, and which is connected with the ends of the rods by flexible The battery will maintain an electromotive force of $2\frac{1}{2}$ volts between its electrodes, and the lamp thus operated, shining through the clear red liquid, will furnish the illumination required. To open or close the circuit it is only necessary to lift the zinc rod from the solution or reimmerse it, as the case may be.

Treating the Work-bench

Editor Photographic Journal of America.

Dear Sir:

I observe in the January number of the Photographic Journal of America, page 38, an article entitled "How to Acid-proof the Photographic Bench." Doubtless the method here outlined is effective, or it would not have the approval of both your magazine and the Amateur Photographer, but a simpler method, which I have used with perfect satisfaction, is to give, at intervals of twenty-four hours, three coats of Calman's "Four-in-One" varnish.

A work-bench so treated retained its surface for four years in my dark-room—so far as I know it is still in good condition, but I cannot speak for more than four years, having moved from the studio in question—and showed itself proof against almost every attack. At various times I spilled on it C. P. sulphuric and C. P. hydrochloric acids, alcohol, stronger ammonia, strong sodium hydroxide solution and boiling water, and have even set vessels containing boiling water direct on the varnish, all without affecting the surface in the slightest degree. The only chemical ever spilled on this bench with damage to the varnish was benzole; this appears to be a powerful solvent of the varnish, and I removed it promptly.

I might add that the floor also was treated with this varnish, which not only held up under wear and tear, but also made it possible to wipe up any spilled chemicals, so that they did not penetrate the wood, to cause future trouble.

Trusting that this information may be of interest to your readers, I remain,

Yours very truly, PAUL L. ANDERSON.

JANUARY 9, 1919.

Apparatus for Vertical Daylight Enlarging

Enlarging with a lantern has many advantages, but is open to certain disadvantages which may even become so great as to put it out of the question. One of these which applies to the worker of sizes larger than, say, quarter-plate, is the size, weight, and particularly the cost of the condenser which has to be used. My own size for landscape work is whole-plate, and a condenser large enough to cover a whole-plate was, for me, quite out of the question. For a long time I had to be satisfied with contact prints, but, finally, the conditions being favorable, I fixed up a daylight enlarging arrangement in a corner of the dark-room, and have since used it with complete satisfaction.

Owing to the position of the dark-room, the only external wall in which I could have fixed an opening and mirror of the ordinary kind was in one of the long walls, and the arrangement of the room did not make this convenient. The alternative was to make the enlarger a sloping or else a vertical one, doing away with a mirror altogether, and allowing the direct light from the sky to shine down upon the negative. Sunlight was not likely to give trouble, as the position chosen for the enlarger was such that its upper end was at all times in shade from the house; and so, after some cogitation, the vertical method was chosen, chiefly because of the very little space it occupied in a room already none too large for what had to be done in it.

The dark-room itself is part of a shed in the garden, and in the roof of the shed, in one corner, I fixed a box, open at both ends. This box must be of ample cross-section: say, four times the area of the negative, more if the conditions require the box to be a long one, or the edges of the enlargement will not be well illuminated. The inside of the box was painted white, and at the top of it was fitted a sheet of ground glass, let in flush with the top of the box and made

watertight with putty. The ground side is downward, so that if the glass should get dirty it can be cleaned at any moment by getting the steps and giving the smooth top a sponge over. A wooden lid fits over it outside on all occasions when the enlarger is not in use.

One side of the box is prolonged into the room, and in this is a hole so placed that when the camera is fastened, with its lens pointing downward, by the tripod screw being passed through this hole, and the reversing back of the camera is

carrying the negative. It fits into grooves on three sides of the box, the fourth side being fitted with a flat piece of wood carrying two knobs to facilitate inserting and withdrawing the slide. The extended side of the box is marked b, and it is to this that the camera is attached by means of the tripod screw.

Figs. 2 and 3 illustrate the easel fitment. Two stout supports c run with an easy but good fit through the blocks d attached to the edge of the bench b. The board a may be of three-ply wood,

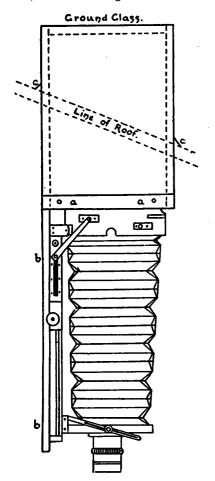


Fig. 1.

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removed, the back of the camera comes up against the frame carrying the negative. An enlarged image of the negative is then thrown upon the horizontal easel below.

The sketches will serve to make clear the general arrangement, which will apply to any size of camera or degree of enlargement. Fig. 1 shows the upper arrangement. The box is seen partly outside and partly within the room, its fitting being made watertight by a fillet of plaster or mortar at c. The part marked a is the slide

as there is no need for it to be heavy. It is recessed into the upright, and prevented from sagging by the two side supports marked e. It will be seen that it can be lowered flat on to the bench for the placing of the paper in position.

The uprights are supported at any desired height by running two long pins—such as stout skewers—through the holes bored in them, so that the pins rest on top of the blocks d. The holes are bored so as to place the board at the exact height required for each degree of enlarge-

ment, and for copying same size; and each hole is numbered accordingly. The sketch, Fig. 1, is not to scale, and makes the distance between the ground-glass and the negative too great,

proportionally to the size of the box.

Suppose an enlargement to 12 x 10 is in hand. The pins are put through the holes marked for that size. The image is accurately focussed on plain paper by means of the camera rack and pinion, and the lens capped. The board is dropped to the bench, the bromide paper adjusted, the board run up again, and the exposure made.

If a greater degree of enlargement should be necessary than that already possible, it could be managed by removing the bench and working from the ground upward; but I have had no occasion for anything of the kind, and, of course, there is the alternative of using a lens of shorter

focus.

The procedure is of the ordinary kind in other respects, except that it is quite surprisingly more convenient than when the work is being done on a vertical easel. Using the full aperture of the lens (f/6.8), no negative that I have ever wished to enlarge has been so dense as to give the slightest trouble in focussing. I do not use an orange glass cap, but one of the ordinary kind. A piece of white paper the size of the bromide paper—a spoiled piece back foremost as a matter of factis used for focussing, and when it is in the right position, four glass-headed pins are put into the board just touching the edge of it, two along one long side and one each in the center of the two shorter sides.

The camera lens is then capped, and a sheet of bromide paper is sprung under the heads of the pins, which are not moved again; however, many enlargements of that size are to be made

from the one negative.

Shading and vignetting can be done with this arrangement just as easily as when working with a lantern—in fact, easier—the image is seen on the horizontal surface so easily and comfortably. The apparatus was made throughout by myself, from materials to hand, so that its cost was practically nil; but if it had to be made by the local carpenter it should not be a very costly thing. At any rate, it should not come to as much as one of the cheapest of enlarging lanterns, even if only in quarter-plate size; while it will cost no more to make it to enlarge from whole-plate, or from 12 x 10 even, than from the small size.

Exposures with this apparatus are of the briefest, rarely exceeding a few seconds. It is perfectly possible with it to enlarge on gaslight papers, even of the slowest kinds; and at an early opportunity I mean to try the experiment of making a platinotype enlargement direct with it. For rapid bromide papers, I prefer to stop down to f/16, as unless this is done the exposures are so short as to make any shading difficult. In order to be able to compare exposures made at one time with those made at another, I use an exposure meter, and gauge the light from the sky, holding the meter just outside the dark-room door, where no direct sunshine can reach it.

A friend has suggested that when not in use for enlarging, a light-trapped lid might be fitted to the box in the roof, which would then serve

as an additional ventilator. He has also advocated the attachment of a bird-scaring device, to prevent sparrows from sitting on the groundglass during an exposure. But so far I have not realized the necessity for either of these complications.—Photography.

Map Reducing with a Hand Camera

FOR reducing a map about 36 x 42 inches to post-card size, I devised a hand-camera method which gave excellent results, with the expense limited to the cost of the films, together with

developing and printing.

A ground-glass back could not be obtained for the camera, so I had a piece of ground-glass cut to fit the space in which the film slides and fastened it in place with rubber bands. A portrait lens which had cost fifty cents was fitted over the regular lens. The back of the camera was off, of course, and a roll of film was inserted but not drawn across the back. The map was tacked, upside down, on a drawing board, which was arranged to stand upright, with the camera a few feet away on a firm support, pointing at the exact center of the map.

With a black cloth over my head I moved the camera backward and forward until the borders of the map came just within the field on the ground-glass, and then focussed carefully by moving the front of the camera in and out, without any regard for the distance scale, until the image was sharp and clear. This was done with the shutter wide open, but when all was ready for the exposure it was stopped down to f/45. Then, while holding the camera down firmly with one hand, the ground-glass was removed, the film drawn across, and the back put on.

A two-second exposure was found to give best results, with bright sunlight shining through the big office windows, at about noon in May. Twoexposure rolls were used, so the films could be taken out and developed at once

This map, distributed on post-cards, was a great success and led to other original stunts which, if only by their timeliness, baffled our competitors in the field.

Flash-light Compounds: Their Points of Danger and Safety

At the present time the use of compounds for the production of a highly actinic light in photography is greatly on the increase. intent is primarily to obtain instantaneous photographs of objects and subjects which may be difficult to obtain by daylight. Not only is the use of these compounds increasing, but their number and different combinations are constantly growing. In the desire to secure great illuminating power and rapidity of combustion the danger of explosion has steadily increased, for it must be borne in mind that all these flashlight compounds should be regarded as explo-

There have already occurred several fatal results from the explosion of some particular flash-light compound or other, and many in which quite a number of persons have had their eyesight affected or have become blinded for life by a premature explosion of one of these



magnesium compounds. Previous to the use of magnesium and aluminum powders for the production of a suitable actinic light compounds of sulphide of antimony and nitrate of potash were employed, but these preparations gave way to metallic magnesium when it was discovered that when this metal was burned in the air or in an atmosphere of oxygen the actinic properties of the light emitted were of such a quality that it surpassed every other known substance for photographic purposes. The metal magnesium was first used in the form of wire, and many negatives of the very finest quality were produced upon wet collodion plates that hitherto

it had been impossible to obtain.

With the advent of the rapid gelatin dry plate, in 1878, the use of magnesium for consumption in photography began to increase. It was soon discovered that this metal was capable of a great increase in the rate of combustion if it was reducd to a powder and blown into or through a flame in the same way as lycopodium was used to produce artificial lighting upon the theatrical stage. This was the beginning of the present-day flash-light powders. The duration of time for the burning of about twenty grains of pure magnesium powder is the seventh of a second. This was found to be too long a time for the production of photographs of any object in motion, so mixtures of various oxygen salts were made with the powdered magnesium, which still further increased the rate of combustion. Just as this rate of combustion has been increased so has the danger of the compound grown with it. The introduction of guncotton as a fuse for the more rapid ignition of these compounds is a further source of danger, and should not be stocked in combination with any of the flash-light compounds.

More recently some of the compounds of phosphorus have been added, with the object of still further increasing the rate of combustion. The great affinity which exists between the high electro-positive metal magnesium and oxygen is the primary cause of their rapid combustion during ignition. Any substance that aids this action only adds to the increase of explosive

properties.

Any attempt to add any of the sulphides to such a mixture would at once form a mixture as explosive as gunpowder. When a compound of magnesium powder and chlorate of potash is mixed, it should be done only in small quantities, because should even a piece of charcoal or a few grains of sawdust be present ignition may take place and an explosion follow from fric-tion alone. The intense white smoke that results from the burning of magnesium is the oxide of that metal. It can in a great measure be absorbed by igniting the mixture under a hood lined with thin asbestos well wetted with water. A light and convenient arrangement can be made to suit any magnesium flash-light apparatus by the above means where the production of the smoke is objectionable. The safest way to handle these explosive preparations is to keep the ingredients separate until a short time before use, mixing them upon a piece of hard glazed cardboard with a bone knife.

The following is a good compound for flash-

light work. Fifteen grains of it require only the one-eightieth of a second for complete ignition, which for safety and rapidity of ignition should answer the requirements of any kind of flash-light work. The flash-light operator should at all times stand as far as possible from the mixture when fired, especially when a large space has to be illuminated:

Mix the two potassium salts in powdered form together, and a short time before use mix with the magnesium. A small piece of pyroxyline may be pulled out into a straight line, with a strip of celluloid attached as a fuse, and placed upon a shallow sheet-iron tray. The required quantity of the above mixture may be spread upon the top of the pyroxyline and fired either by igniting the celluloid fuse or by applying a lighted taper at the end of a yardstick, taking care not to look at the mixture at the time of ignition, as the light is exceptionally brilliant and would surely affect the eyesight. If the above precautions are taken, successful flashlight work may be done with perfect safety.

The Focussing Screen

THERE is no part of the portrait photographer's apparatus which is more frequently misused or over-worked than the focussing screen. It is safe to say, indeed, that nineteen portraitists out of twenty ask this much-abused accessory to do work for which it is quite unsuited. The inevitable result is that the quality of their work suffers and their business does not flourish as it should.

The focussing screen of a portrait camera is simply intended for focussing the image and placing it in its proper position and for helping to calculate the exposure by the amount of illumination which it shows. That is about as far as it can go toward the making of a portrait and, if it is relied upon to a greater extent, it is more likely to become a hindrance than a help.

The more skilful an operator becomes, the less he relies upon his focussing screen. He learns that the image it shows is deceptive. The finely graded emulsion of a portrait plate will pick up detail which is hardly visible on the comparatively coarse grain of the ground glass. What looks like a mass of impenetrable shadow on the focussing screen may become a pleasing, luminous, low-tone in his picture—provided the

proper exposure has been given.

Many of the most skilful operators in portrait photography never worry how the picture looks on the focussing screen until they are ready to make the exposure. They have trained their eyes to look direct at their sitter from the level of the lens, to note every little play of light and shade, to measure the depth of a shadow, and to know when to heighten or subdue the high-lights. They have learned to settle the composition and lighting of the picture before resorting to the camera at all.

One of the ablest photographers in the country admitted recently that he had not looked through

a focussing screen twenty times in as many years. He leaves the focussing to his assistant while he concentrates his own attention upon the posing and the lighting of his sitter. When everything is ready, he gives a signal to his assistant, who brings the camera into position and focusses the image. As soon as this is done, another signal is exchanged, the plate-holder is inserted by the assistant and the bulb is pressed by the photographer whose attention has not been diverted, even for a moment, from the artistic side of the task in hand. This method of working undoubtedly goes a long way to account for the sincerity and the spontaneity, the natural posing, the effective lighting, the pure tone rendering and all the other high technical and artistic qualities which distinguish his portraiture.

Needless to say, this man is a photographer of much experience and that may explain in part, at least, his personal indifference to the focussing screen. The inexperienced operator, who is often more timid and bashful than his sitter, would be unable to proceed at all if he could not hide his head at frequent intervals under the convenient black cloth. It is certainly a trying experience for a youth who has just finished his apprenticeship to find himself face to face in the studio with a local celebrity in evening clothes or a great lady in an evening gown. And the operator whose lack of self-confidence first drives him to an excessive use of the focussing screen is only too apt to continue in the same bad practice all his life as a mere matter of habit.

There is another point of view to consider—the point of view of the sitter. Can you guess the feelings of a shy or sensitive sitter who patiently waits for the photographer to look on the focussing screen, shift the camera about, take another look, reef a curtain, look again, move the reflector, and so on for ten or fifteen minutes? Can't you imagine how disconcerting and irritating it must be to sit there with the muzzle of a lens levelled at you point-blank, at short range, and a man behind it with his head buried under a black pall, issuing instructions about turning the head, raising the chin, closing the lips, and looking a little to the right or to the left?

It wouldn't be very pleasant, would it? If that is your method of working, can you wonder that there are still people who say that they would rather go to the dentist's than have their photograph taken?

Don't be a slave to your ground glass! Learn to pose your sitter, arrange your lighting, and make all your preparations before you bring your camera into play. You will get better negatives, better expression and—better orders!—Studio Light.

Intensification of Flat Negatives

WE note in the Italian journal Progresso Fotografico a suggestion of Professor Namias for dealing with negatives which require considerable improvement of contrast. The method is one which is deserving of mention, inasmuch as it utilizes intensifying solutions in common use, and yields a result which should not be open to objection on the ground of impermanence.

The negative is first only partially bleached—only to the half-tones—by a very short application of a bleaching solution as used for the chromium intensifier, i. e., Potass. bichromate, 2 gms., hydrochloric acid, 5 c.c., water, 1000 c.c. As soon as the half-tones only have been bleached, as judged from the back of the plate, the latter is well washed, immersed in a bleaching bath of mercury bichloride until fully whitened, and again well washed. It is then re-developed in full daylight until thoroughly darkened through to the glass side. The rationale of the process is the conversion of part of the image into silver chloride, and of the remainder into silver-mercury chloride. The former is simply restored to metallic silver, but the latter to metallic silver and mercury.—British Journal of Photography.

Studio Flashes

ALTHOUGH "smokeless" flash powders have been advertised from time to time, we are afraid that the description is far from accurate, for with the best of them the atmosphere of an ordinary studio would be unbearable after, say, four flashes in rapid succession, and long after the air was breathable again there would be enough smoke left to prevent any chance of making a bright negative. We must, therefore, find some method of evading this nuisance, and this is best done by firing the flash in a closed receptacle, so that the smoke never enters the studio. This may be done either by making a cabinet, with a tube or chimney communicating with the open air, or by firing the flash outside the studio window. The latter is perhaps the better course, as the floor space of the studio is not encroached upon, although the necessity for a cabinet is not removed, as not only is a reflector behind the light very desirable, but it is necessary to cover the flash to prevent annoyance to the neighbors. A light wooden or iron box about three feet square on the front and twenty inches deep may be hung close under the eaves of the studio, and this, furnished with a pan and igniting device, is all that is needed. If of wood, the interior and exterior should be thickly coated with whitewash. The top of the box should have a six-inch hole to allow the smoke to escape, this being covered with a lid supported on blocks to keep the rain out; a pane of glass should be made to hinge or move otherwise, so that the lamp can be recharged from the inside of the studio. A cabinet for inside use may be made on the model of a "Punch and Judy" show, a light wooden framework being covered with canvas which is well whitewashed on both sides; the proscenium opening, which should come lower down than in the genuine article, is covered with close muslin or nainsook, which should be saturated with alum or tungstate of soda. The chimney may be of card if straight or of calico sewn over a spiral wire, the outlet end being carried into the open air by any convenient route. In these days of electricity, flash-light is not often used in regular studio work, but there are many working in camps or villages to whom it is a necessity for winter work.-British Journal of Photography.

Stripping Negatives for Storage as Gelatin Films

The conditions for the supply of dry-plates have naturally turned the thoughts of photographers toward methods which may be employed for returning the stipulated quota of glass while retaining in their possession such negatives as they judge will be of value from the point of view of re-orders. In ordinary times one would not recommend as a working system the stripping of the negative film from its glass support and its preservation in the form of a thin sheet of gelatin without other support. But it can readily be understood that many studios may be so circumstanced as to find it desirable, if not necessary, to adopt such a plan as this; and therefore it may be of interest to say something on the practical means which may be adopted to this end.

The first step in the process is to cut through the gelatin film to the glass with a sharp, rigid knife close to the four edges of the plate in order to cut away any emulsion coating which may be adhering to the edges of the glass. The plates are then immersed in formalin, the commercial liquid as purchased, for ten minutes or so. The formalin bath may be placed in a grooved tank, and is best used in a tank, not only on account of handling a number of plates at once, but also because the vapor of the formaline can be more or less prevented from escaping by means of a lid on the tank. After this first treatment, during which the gelatin film becomes thoroughly hardened, the plates are transferred, or only so many of them as can be expeditiously handled, to a similar bath of formalin to which commercial hydrofluoric acid has been added in the proportion of 2 per cent.; that is to say, $\frac{1}{2}$ oz. of the acid to 25 oz. of the bath. This second bath should be used in a vulcanite dish. It is necessary for the negative to remain in this second bath only for the matter of twenty seconds, or so, after which the negative is removed from the solution, given a rinse under the tap, and the narrow edgings of gelatin then stripped off. It is then given a further short wash in order to remove traces of acid. This washing is best done in a flat dish into which a gentle stream of water is led; washing in a tank, particularly with any vigorous flow of water, is liable to disengage the film from the glass prematurely.

The negative is now in a condition to have its film removed from the glass, which is done by laying upon it a slightly larger sheet of tough paper, such as good writing paper, previously soaked in water. The paper is brought in firm contact with the negative by careful use of a squeegee. Undue action of the squeegee must be avoided, otherwise the negative is liable to be distorted. A corner of the paper is then raised, and a thin pointed knife used to ensure the corresponding corner of the negative adhering to it. This being so, the paper can be removed, carrying the gelatin film with it.

In order that the film may dry without shrinking or distortion it is necessary to have it upon a glass plate, and a supply of such plates sufficient for dealing with a batch of negatives dealt with at a time requires to be kept. These plates are thoroughly cleaned and polished with French chalk, as is done when using them for the glazing

of prints. The gelatin film, still thoroughly wet and adhering to the paper, is then brought down upon a clean glass plate, and, again by means of a thin pointed blade, the paper is removed, leav-ing the film upon the glass. The film then requires to be left to dry slowly. Any hurried drying is certain to lead to crinkling of the film, and for the same reason it is necessary to avoid drying in a place where there are irregular currents of air. The best plan is to lay the glass plates exposed to the air of a moderately warm room, the windows and doors of which are closed. Those who may have had occasion to dry the now perhaps forgotten Cristoid films will recognize the need of this precaution although the ordinary film of a negative is thin in comparison with that of a Cristoid film, and dries in a correspondingly lesser time and with less liability to When the film is perfectly dry it is distortion. peeled off the glass, and can be kept in its then flat state by storing it where it will be subjected to a certain amount of pressure. One or two other hints may perhaps forestall any difficulties which may be found in this process. One is that negatives which may have been handled with greasy fingers should be first cleaned up by rubbing over the surface with benzene applied with a tuft of cotton wool. Negatives which have not been too heavily treated with retouching medium will strip readily, and some experience with existing negatives will show what amount of retouching they may carry without leading to difficulties in stripping or necessitating the removal of the retouching before the process. In the event of negatives being required for further prints, the film negative can, of course, be supported in the printing frame like one on celluloid film, while if it has been necessary to remove the retouching medium calling for further retouching the negative will require to be soaked in a 1 per cent. or 2 per cent. solution of glycerin before being squeegeed down upon a glass plate which has been flowed over with a weak solution of gum, this coating serving to hold the film to the glass, and thus making it practicable to carry out any retouching work which could not readily be done upon the negative in its film condition.—British Journal of Photography.

Modelling in Portraits

ONE of the points in which a good many amateur portraits are wanting is in what is known as "modelling." To illustrate what is meant, let the reader cut an opening in a piece of paper a quarter of an inch square or so, according to the size of his print, and place it over the cheek of the sitter, so that only a comparatively small portion of it can be seen through the hole. Then let him ask himself whether the light and shade on the part which he can see suggests the actual curvature of the surface, or whether it is merely a flat tint. Too often it is the latter. It is this capacity to indicate form by light and shade which constitutes modelling; and in all successful portraiture it is an essential.

In order to get good modelling in the photograph, two things are requisite: we must have it in the original subject, and we must reproduce it

in the print. In very many cases it is not the technic involved in the production of the photograph which is at fault, but the arrangement of the subject. Sufficient attention has not been given to the lighting of the sitter to secure it. The beginner, often provided only with a lens of comparatively slow kind, worries most about getting plenty of light, so as to keep his exposures as short as possible, rather than about the direction and intensity of the light. A short exposure is helpful, and one would not unnecessarily do anything to lengthen it, but we must not sacrifice the whole success of the portrait to such a consideration.

The least modelling is visible when the light falls from the direction of the camera itself, and the most strongly marked when it comes in a direction at right angles to this. Modelling is most abrupt and decided when the light proceeds from a very small source; it is most gentle when the source is large. For instance, if the background is placed right opposite the window, and the camera is somewhere between the sitter and the window, the modelling will not be very marked, because of the direction of the light; but what there is will be well brought out, because the window is relatively a small light source. By leaving the sitter and background unaltered, but moving the camera round more to one side, we shall see at once that modelling becomes more marked, because more and more of that part of the sitter on which the light does not directly fall will be included in the picture.

Another point to note is that the nearer the sitter is to the window, the larger relatively is the light source. When working near a big window it is often distinctly advantageous to cover up part of it, preferably the lower half. For strong lighting, part of the upper half may also be blocked out; or, on the other hand, if the lighting seems already too strong, we can soften it, without loss of modelling, by hanging over the window some muslin or other diffusing material. A thing to avoid, it is clear, is too large a light source. This is where a conservatory so often fails as a studio. The light falls on the sitter almost equally from all directions, and the result is a flat illumination, in which the modelling is lost.

Modelling, as far as the subject is concerned, can be seen and studied on the ground glass; or, better still, directly—by standing behind the camera, and observing the effect produced. A plaster bust, life-size or nearly so, is a fine subject for experiments, in modelling; not only because it does not get tired, but also because, being plain white, all the alterations of light and shade brought about by modification of the lighting and viewpoint, can be seen clearly without any local color to interfere and conceal the effect.

Having arranged the lighting so as to give the modelling required, it only remains to make quite sure that we do not lose it in the photographing. This means that the exposure must be ample, and that the negative must be properly developed so as to contain sufficient gradation to give what is required in the print. Many portraits, which might otherwise show good modelling, are unsatisfactory in this respect from the negative having been overdeveloped. The result of this is that

the high-lights do not print out at all, and instead of roundness being suggested, they are represented by nothing more than an area of blank white paper. Overdevelopment in portraiture is as serious a defect as under-exposure; except for this, that if it is not very excessive, it can be remedied by the use of a printing paper which gives a softer image—as, for example, the so-called "portrait" varieties of gaslight paper, in place of the ordinary kind.—Photography.

Acid Fixing Baths

ALTHOUGH there are many photographers who never use any other fixing bath than a plain solution of hypo, it is recognized by the great majority that for certain purposes the acid fixer has its advantages. For prints on bromide or gaslight paper it is a precaution against staining; and for certain gaslight papers the finest quality of image can only be obtained when the hypo contains some free sulphurous acid. For roll-film also the acid fixer has its value as a preventive of staining of the gelatin non-curling backing of the

The essential feature of all acid-fixing baths is free sulphurous acid, and the various formulæ which have been published only differ by providing different means of bringing about that result. Some of them, it is true, contain alum; and it is contended that, in spite of mutual decompositions, this alum is still able to exercise a hardening influence upon the gelatin; but this does not affect the statement that all acid-fixing baths, as such, consist essentially of hypo, sulphurous acid, and, of course, water.

It may not be generally known that there is a perfectly simple and satisfactory method of making such a bath by adding the sulphurous acid direct to the solution of hypo. Commercial sulphurous acid is a solution of sulphur dioxide, a gas, in water. It can be obtained without much difficulty, as a rule, or at least it could be obtained, before the war. An ounce of it added to a pint of hypo solution of the required strength makes a good acid fixer. The gas itself, compressed into a liquid, was also commercially obtainable, being supplied in glass syphons. Much less of this than of the solution would be needed, but the gas is extremely poisonous; and in the compressed form it is not the kind of thing which the amateur photographer would care to have about.

The principal objections to the direct use of the acid are that there are easier ways of getting the same result, while the solution of the acid in water deteriorates in strength pretty quickly, and so its composition at any particular moment is uncertain.

The more usual practice is to employ one of the salts which contain it, of which there are two in general use by photographers—sodium sulphite and potassium (or sodium) metabisulphite. Either will do, but there is a difference between them in the method of their use.

Metabisulphite is a salt in which there is an excess of sulphurous acid, so loosely combined with the alkali, potassium, or sodium, as the case may be, that it always has a tendency to liberate some of it. We have only to smell a crystal of the metabisulphite, or some of its solution in water,

to recognize at once the presence of the sulphurous acid in it. There is sulphurous acid in sodium sulphite also; but in this case it is much more completely united with the sodium, and the sample, either dry or dissolved in plain water,

should have no smell at all.

In consequence of the ease with which it parts with its sulphurous acid, we can use the metabisulphite just as it is, to make an acid-fixing bath. All we have to do is to add a few crystals, or a little solution of the metabisulphite, to the hypo, and we at once have sufficient sulphurous acid present to give us what we want. A suitable proportion for all-round use is half an ounce of the metabisulphite to the pint of fixing bath. It is best to add the metabisulphite after the hypo solution has become cool, if hot water has been used in making it up; as the heat would drive off some of the sulphurous acid, and the solution would be weakened to that extent.

The only objection to the use of metabisulphite is that it is comparatively expensive.

Before the war there was obtainable a liquid known as sodium bisulphite lye. It was very common in France; but in this country it could only be got from one or two of the larger houses, such as Johnson and Sons. This was to all intents and purposes a strong solution of sodium bisulphite; and, being cheap, it provided a very convenient and economical method of making an acid-fixing bath. An ounce of the liquid added to a pint of the hypo solution was a convenient

proportion.

We now come to the use of sodium sulphite for the purpose. The sulphite cannot be used by itself, as the sulphurous acid which it contains is too closely combined with the sodium. We must add to it some other and more powerful acid, which, by combining with the sodium, will liberate the sulphurous acid. There are many acids which can be used—sulphuric, citric and tartaric are those most commonly used. The acid must be added to the sulphite before this is mixed in with the hypo, as otherwise the acid, instead of combining with the sulphite, would attack the hypo, and we should get a mixture with some very undesirable constituents.

It is most important also not to add more acid than is needed to decompose the sulphite, or the excess of acid will be carried into the hypo with the same result. In practice it is usual to add decidedly less acid than is needed to decompose the whole of the sulphite, so as to leave an ample

margin of safety.

To make up an acid-fixing bath with sodium sulphite, a strong solution of the sulphite is first prepared by dissolving an ounce of the crystals of sulphite in two or three ounces of hot water, and diluting the mixture to make four ounces in all. When this is dissolved and cool, half an ounce of citric or tartaric acid may be added and the mixture left until it has dissolved. An ounce of the solution so obtained should be added to each pint of the fixing bath. The acidified solution of sulphite can be kept as a stock solution, and added to the hypo as required.

Such are some of the methods by which an acidfixing bath can be prepared; among them the amateur is likely to find one which will be more convenient to him than the others, and he can select that one for use. The final result, whatever may be chosen, will be the same. The employment of an acid-fixing bath is necessary in certain cases, as already mentioned, but it should be used with discretion. As it keeps clean and free from stain much longer than a plain solution of hypo will do, there is always a temptation to keep it in use for a longer time, and one must be on one's guard against employing it too long, when it has become so far exhausted as no longer to be in proper working order. All acid-fixing baths have a tendency to deposit sulphur, but in this respect those made up with metabisulphite are to be preferred, as they show it to a much slighter extent than any others.—Amateur Photography.

Cleaning Old Daguerreotypes

A SHORT time ago a friend turned out some old and very interesting toned Daguerreotype stereoscopic slides, and handed them over to me with the idea that I might be able to effect something in the way of restoration, the whole of them being in a very dilapidated condition. All were badly stained in a variety of colors. One had two cracks in the cover-glass right over the center of the image, and broad bands of color under the cracks. One slide was on a single plate, but the others were all on separate plates, and in several cases the binding was broken and the plates loose, slipping over and scratching each other and occasionally falling out altogether. One of the loose plates showed patches of a brown rust-like deposit with green specks here and there, and was also very badly scratched; therefore I experimented with that one first, as it was obviously impossible to make its condition any worse than it was already.

The instructions in Wall's Dictionary were taken as a basis, and in the first instance I departed from them in only one small but perhaps important respect. Briefly stated, these instructions suggested flowing Columbian spirits over the plate to remove apparent grease, washing in water, immersion in a hypo bath to remove blue stains, flowing with potassium cyanide to remove bronzing, washing to remove the cyanide, and, finally, rinsing in distilled water, followed by drying over a spirit lamp or Bunsen. Considering the nature of modern Columbian spirit, I used absolute alcohol in preference, but otherwise kept to the instructions in my first experi-

ment.

I noticed that the hypo bath was apparently very ineffective as regards the removal of even the blue stain; hence, with some slides, I tried the effect of cyanide alone. This attacks the blue stain immediately and the brown stains slowly; but eventually it appeared that though the hypo bath had little visible effect on the stains, yet it seemed somehow to prepare the way for the cyanide, which acted more rapidly after the hypo had been used; hence I ultimately used both.

The result of the cleansing operation was surprising, for the stains disappeared and also the rusty and green deposits before mentioned, and while scratches, of course, remained, the whole of the slides when finished had an appearance



that could not be very different from that which they possessed when first made.

The following are the precise details of the

operations as finally conducted:
A little absolute alcohol was first flowed over each slide, about a dram being sufficient in each case, and the plate was then immersed in water under a gently flowing tap. In two or three minutes its surface retained the water perfectly when drained, and it was then immersed in hypo (4 ounces to the pint) for ten minutes. the hypo bath the slide was rinsed under the tap for about half a minute, then placed in an empty dish and treated with the cyanide solution (10 grains to the ounce of distilled water) until the stains practically disappeared. As the cyanide attacks the copper plate, it was thought best to repeatedly pour the solution on and off the plate, as advised in the *Dictionary*, but in obstinate cases the plate was left in the cyanide solution for a few minutes. Its action on the copper is very slight, and possibly of no consequence as regards the image; but I thought it advisable to frequently replace the cyanide with fresh solution, and certainly found that this considerably quickened the cleansing process.

In some of the worst cases the stains were very obstinate, and I repeated the alternate applications of hypo and cyanide several times. Finally, however, I came to the conclusion that this repetition had little if any effect, and found that even though faint traces of brownish stain could still be detected in the wet cleansed image, such traces almost completely disappeared in the The wet slide does not in any drying process. case look very clean, but drying produces a won-derful change. The background becomes a brilliant mirror, while the image changes from a

brownish hue to pearly white.

A very brief washing after the cyanide is sufficient, but I allowed five minutes in running water. After this all traces of tap-water were removed by four rinsings in distilled water, accomplished by simply flowing the water over the plate, rocking well, then draining off the water and replacing it with fresh. It is necessary to remove all tap-water, else a deposit will be left on the film on drying.

The drying operation is quite simple, and the Dictionary instructions are ample: "Take hold of one corner of the plate with a pair of pliers, and dry evenly from a top corner downward,

over a spirit lamp or Bunsen burner.

As soon as possible after drying, the plates were remounted and sealed with varnished

bindings.

Not only did the results of these cleansing operations surpass all expectations, but the operations themselves, contrary to all preconceived ideas, proved to be perfectly easy and safe. Provided no attempt is made to rub the stains even with the slightest touch of a pad of cottonwool, no mishap need be anticipated. I cannot say what effects would be produced with untoned images, but toned specimens can be treated with confidence.

The slides themselves are interesting specimens

first, because stereoscopic daguerreotypes are not often met with, and second, because these slides give certain effects that cannot, I believe, be produced by any other method. Some of the slides show cut-glass vessels, and while the single images only give a good photographic representation of glass, the stereoscope reveals what appears to be glass itself. The illusion is perfect, and I am not acquainted with any other process capable of giving anything approaching the effect. Surface texture is shown in a way that can hardly be rivalled, and the delicate distinctions between metal, wood, glass and china surfaces are preserved in a surprising

An unfortunate characteristic of the slides is an enormous exaggeration of the relief. They were probably taken in a single-lens camera, and though they are mounted with a separation of only 25 inches, the camera must have been shifted to a much greater extent between the exposures.

Only one slide is labelled, and that is the single plate one, which bears the inscription on the mask in gold and black: "Epreuves Stéréoscopiques. Superposition Mathématique des Contours et des Ombres. Brévetées, S.G.D.G."

The rest have painted masks and no inscription but all are probably of French make, though only one bears positive evidence of that fact.

Focal Length and Stop Values

Many photographers do not pay sufficient attention to the altered stop values of their lenses, when the latter are being used for copying or other work at considerably more than their ordinary focal length. Neglect of this is more general when a complete lens is being used than when the single components of an R. R., or convertible anastigmat is employed; in the latter case the operator knows, and allows for the longer focus and the smaller stop value. Recently, we met a photographer who complained that through some unexplained cause his R. R. lens, which gave first-class results at its marked focus, always produced harsh and inferior results when used for copying. Upon examination of the negatives, we noticed what looked like under-exposure; but this the operator said was impos-sible, as he had very carefully timed his exposures with the meter. Subsequent discussion showed that he had entirely overlooked the fact that though his lens was marked f/8 at its normal focal length, when copying it was used at a much longer camera extension, and was in reality f/16. In ordinary work a few inches would not make much difference in the stop value, but when the instrument was used for copying, as in the present instance, the value of the stops had been completely changed, with the under-exposed results described, for which the lens was blamed. Photographers, in common with many other people, often blame their instruments without looking into the subject to find the real reason for defective work.—British Journal of PhotogPUBLIC LIBRARY
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NOTES ON CHILD PORTRAITURE

By JOHN A. TENNANT

N the treatment of a single childish figure we have an infinite variety of effects from which to choose. Simplicity will most often be the keynote to success, whether we photograph the child alone or with an accessory of some sort. Among a number of prints received from Japan were several studies of a child arranging flowers and sprays of budding plants in vases. The combination impressed me as a peculiarly happy one, and its mention suggests a line of work wherein many novel and interesting effects may be obtained. The draperies need careful attention in pictures of this sort. Our endeavor should be to avoid stiffness in arrangement, and to reproduce something of texture and detail, instead of the harsh and confused mass of clothing often observed in children's pictures. This, of course, is largely a matter of illumination, exposure and development.

The difficulty of shyness or reserve is more often encountered with single children than in photographing groups. This

we can generally overcome by taking the child into our confidence, and explaining the camera as we get it ready, avoiding absolutely any remarks calculated to alarm the little one. I have had the best results when I had the camera set up and focussed on a particular spot, asking the child, perhaps, to show me its eyes wide open for a moment while I secured the proper sharpness, and then allowing it to wander away at will. By noting the surroundings properly, the operator may avoid the necessity for any further use of the ground-glass, putting in his plate, setting the shutter, and, with bulb in hand, awaiting the happy moment of the child's return. A chain, a railing, a curtain, the open window, a door ajar, the end of the piano, a rug on the floor—all these may serve as locating points for the little boy or girl to be pictured and help us to get them on the plate.

Generally, the chief annoyance the ambitious worker will have results from the well-intended efforts of the friends

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BY ALICE GESSON CHASE

NEW YORK CITY

and relatives of the child to help. A charming disorder of apparel is seen; but the child is promptly taken off and hastily attired in its best bib and tucker, meanwhile being often pulled into stiffness and ill-humor. Then, when shining with the face-rubbing, stiff in its unaccustomed finery, the little one comes to the camera, the friends come, too, and it is: "Now, Edith, look pleasant; do hold your head up!"—"Don't stick your fingers in your mouth," and so on, ad nauseam, until the poor child is utterly impossible. Under such conditions I have found a little guile very useful: Let the well-meaning relatives or friends stiffen up the subject to the last notch of woodenness, and then go through the motions of an exposure all but exposing the plate. Then, explaining that you merely want to try an experiment, drive out the friends, get the child soothed into naturalness, wait until all memory of the ordeal has passed, and take your own chance with the plate!

As to clothing, there can be no question that the best is that in which the child will be most comfortable. The simpler it is, the better; it is the child you are picturing, not the dress.

It is always better, provided the worker is properly acquainted with the child, to have not more than one other person about. Nothing so detracts from naturalness, or so tends toward the usual studioishness of the gallery portrait, as a number of assistants. Get rid of them, all but one sympathetic helper who can be depended upon to do only what you say, and your chances of success are far better. A child is easily confused, and does not yield so well to the camera's needs when several people claim attention.

Very young babies are hard to manage, unless in the mother's arms. The spectacle of a plump child piled into a chair in which it is unable to sit alone may be pleasing to the parents, but there is no picture coming. The very little one is



BY B. V. MATTHEWS THE MATTHEWS STUDIO CONCORD, N. C.





often most charming as the mother holds it, and with proper care results that are pleasing may be had. Unconventional pictures may be made by preparing for the work in a very bright light, the camera resting on a stool or large book,



BY ALICE G. CHASE NEW YORK CITY

focussed on a selected spot, wherein the child is induced to creep. Many dwelling houses have large windows, so that when the curtains are fully put aside the light is strong enough to permit of exposures of one-half to one second; and while some plates will be wasted, some priceless negatives may be obtained. When the child is able to stand up to a chair the sympathetic and well-prepared worker has some fine chances, and pictures which show the bare feet of the little child are often most charming. The baby may be induced to play on a dark rug, placed in the proper light, and

then it is a matter of patience and good

judgment.

In photographing children with their toys, two or three little points need close attention. It is better, for instance, to wait until the little ones are really interested and busied with their toys than to get them merely holding a toy and looking at the camera.

Sometimes a toy in the hands of a very young child is an obstacle to success, because the baby will put things to his mouth. Here, of course, the toy should be retained by the photographer or kept out of sight altogether. When and where and how to use toys in handling children are, in fact, questions which can only be carefully answered with a knowledge of the children and the circumstances. Occupation of some interesting sort, or a picture-book, may often be substituted for the toy with positive advantage.



BY B. V. MATTHEWS

Perhaps the most charming of all the children's pictures I have seen is a group of children "playing school," made by Mr. Core. The group comprises five or six children of one family, and takes the form of a lateral triangle running length-

wise across a 5 x 7 plate. Four of the children, arranged in the order of their ages, are grouped closely together to form an oblique, irregular line, dividing the picture space from upper left- to lower right-hand corner. The way in which they nestle together to see a folio held in the hands of an elder child is very delightful. At the left hand the dark figure of an elder brother, busied with a design upon the miniature blackboard or wall-slate, adds force to the motif, and at the lower apex of the triangle sits

the baby of the family, slightly separated from his fellows, independently occupied with a picture-book in proud imitation of his companions. Pictorially the little figure binds the composition together, and the arrangement of lines and tones gives one a continual feast of pleasure and interest. Numberless compositions along similar lines will suggest themselves, in which the small furniture so commonly used by children nowadays may be made to help in the picture-making.

HOW TO MAKE YOUR STUDIO A SUCCESS

PART I

By "PROFESSIONAL"

B USINESS conditions may be said to exist in photography when, broadly speaking, a gallery equipped to make photographs is set down in a community that can be made to buy them.

Specifically speaking, this definition is capable of many modifications and much enlargement. There are a great number of galleries in good locations that will never be equipped on a business basis. Starting, however, with the broad basis of a gallery equipped for making photographs, we must study all the conditions surrounding, and lay out a definite policy of work before claiming that it is established on business lines.

It is not enough to simply plant ourselves down in some community, open a gallery or studio, and start in to do anything or everything in the photographic line that may come along at haphazard. Our capital has been invested, and it therefore is requisite that we lay out our business conduct and methods in such a way as to make profits certain.

The varying conditions under which a studio must flourish or decay, the widely differing demands of different communities, and the detail incident to the

successfully carrying on of a photographic business render system and policy particularly important in this field of affairs. We should, therefore, lay out a definite plan of action at the outset and decide whether the policy shall be worked out on lines of large output and low prices, or upon smaller production and a proportionate increase in value.

We should settle upon the line of work to be followed, whether new or old school. Shall we cater to the clamor for the eccentric, or educate the people about us to a higher appreciation of good photography along the old lines? A definite policy, once adopted, should be made the central point around which every business transaction groups, and the local conditions should be so moulded as to fit the policy rather than that the policy be bent and weakened to fit conditions.

Your gallery having been established in accordance with such a policy, we may next assume that business conditions do exist, and may now properly take up the question of improving them.

How can we move the dollar mark up a place, from time to time? By remembering first, last and always that



BY C. EDWARD POWERS MILFORD, N. H.



the photographer must study and practise business methods just as much as he practises the technic of his profession. Yea, even more, for the average photographer has often a predisposition toward photography and has often a positive aversion to business.

Business elements should not absorb or swamp the artistic sensibilities, but must be present as the motive power under which, if properly directed, the artistic qualities of the studio are to be made to improve and grow in value year by year. We are never to surrender our artistic ideal, but always cater to the kind of business that will bring money returns. Photography is growing in dignity and importance year by year. Its art possibilities are only in their infancy.

One of the first duties of a good business man is to see to it that his plant is conveniently arranged and economically administered. Waste of time and energy in the accomplishment of any part of the work is as unbusiness-like as waste of money and material.

The studio, skylight, printing-rooms, and all appointments should be studied with reference to economy of labor. Situated so, the work goes logically forward step by step to completion.

Help enough should be employed to perform the necessary work promptly, but every member of the staff should have work laid out to keep him busy all the time during business hours. Idleness prompts lack of interest. The purchase of stock and supplies must be wisely conducted, and, above all, care must be taken to guard against leakage and waste. The head of a business should keep posted on new goods and apparatus as they come into market. He cannot purchase them without this wisely knowledge. He must, therefore, not only read text-books and works on technic, but should keep posted on the dealers' catalogues and lists of new goods. This is also required of him in order that he may do justice to his trade, and justify their confidence and patronage.

Set the style in photography, as the milliner or dressmaker aims to do. Establish friendly relations with the neighbor and rival across the street.

Become as familiar with the contents of his showcase as with your own. Learn as much as possible of his methods, and keep fully in touch with the social and political life and movements in the community. Keen competition will stimulate business for both.

Be progressive and up-to-date. Strive to be the best man in your community in some one line, at least. If this can be effected, the field will grow of itself.

Specialize on some line of work. The present is an age of specialization. It is better to be strong in a small place than lost in a large one. But do not try to introduce a new line until you are first yourself thoroughly familiar with it. Cultivate individuality in handling sitters. Study variety in lighting, posing, etc. Master something. Never copy another man's successful style until you first know what is the secret that lies behind its success.

When we consider the rapid strides of the past few years, we realize that the man who does not attend to these things will shortly be found hobbling along behind the procession.

I believe that the studio should be made as much as possible the local art gallery of its community; a meeting place for busy shoppers to join their friends, where appointments may be made, and visitors encouraged.

Half of the rent of the average studio is in the reception-room; let it be made such use of as will render it a paying part of the business, and return its full share of the rent expense. Make its surroundings attractive, and let your displays be changed frequently. We are always to treat photographs as merchandise made to order, each requiring individual treatment.

Display samples with taste and discrimination. Avoid offending sitters. Aim to hold every present customer, and to make him or her a personal advertiser for the studio, not only thus making sure of holding present trade, but winning new business.

Summer conditions for exposing, printing, etc., should be utilized and summer business especially bid for. Keep high-priced work by itself in a drawer or

cabinet. This adds apparent value and individuality to it. Do not cut prices.

Make old negatives pay cost of storage, care, etc., in duplicate orders. There are ways in which this may be done. Keep files alive. Know what you have, and where it is.

Avoid opening the studio on Sunday, not alone for moral reasons, but because six days out of the week should be enough for labor. Overworked body and brain are always at a discount.

Make skill and ability the standard of value on which prices are fixed. Time spent in learning to make good photographs should be taken into account as much as the material used. You all know the story of the prominent lawyer who was stopped by a client on the street, and asked for advice regarding a pending matter; the lawyer gave it at once, and the client passed on and was governed by it. Later when the lawyer sent in a bill for \$500 the client protested that he had only detained the lawyer ten minutes, and for this he asked a fee of \$500. "But," said the lawyer, "you forget that it took me twenty years of study of law-books and trial practice to render me competent to give you such advice off-hand.

The mistake is sometimes made of basing prices on cost of material and wages, plus 20 per cent. or 25 per cent. to cover incidental costs and profits. This is far too low in most cases; too many factors—weather, seasons, etc.—are overlooked. Raise quality always, but never lower prices.

Remember that photographs are in a sense luxuries; that photography is, therefore, first to feel trade depression; and that, at best, it is largely dependent upon the fluctuations of the seasons. Buyers of luxuries can usually afford to pay well. Prices are relative; \$10 in one community may be better than \$20 in others. Never increase an established price without some sensible advance in quality, and the setting forth of a plausible reason for the increase in price.

Study neatness, order and system in every department of your business. Be especially watchful of your show-case or show-window, that it is scrupulously clean and as attractive as possible at all

times. Remember that it is in many cases the first medium through which you are introduced to a new customer.

A neat show-case, not overcrowded, is usually better than a large window. It is difficult to fill a window with good specimens, frequently changed. Study simplicity and variety of arrangement. Small collections of choice prints well framed are better than many small prints arranged close together. If prices are listed in the show-case a small, neatly printed card of rates is best.

Utilize all parts of the plant; make everything do its share. The photographer in a suburban town must wake up and keep his trade, and, if possible, prevent its escape to the city. Branch out. Cultivate exterior and interior and "at home" photography. Catch the man with the new trotter, the ministers of your community, rising lawyers, etc. Watch commencements and school classes. New houses may be made special subjects.

Establish a framing department, that you may be placed in a position to furnish framed enlargements when desired. Cultivate the summer visitors in your neighborhood. Above all things employ tasteful stationery and accessories.

The wideawake and progressive photographer is at all times sensible of the advantages of fraternity of interest. Attend the conventions that are accessible to you, and read the magazines for the proceedings of others. He who helps his neighbor helps himself. In this view conventions aid photographers more than any one photographer can aid the conventions. Always be watchful for new ideas, which are to be found at conventions in abundance. If there is no local photographers' association in your vicinity, establish one, and, if only two photographers, get together and talk over matters.

And after all these things, what? Sit down and wait for trade to come in? Never! Publicity! Publicity!

In short, any gallery established in a community, if properly equipped, can command patronage. The community may by proper effort be made to buy.

If we do not control the situation, before we know it, unless we forestall the

event, the business will be going past our doors to the studio of some new man, who, with less prestige, less technical ability, less of everything save a keen sense of business conditions and requirements, suddenly enters the field and by judicious methods of publicity captures the best business of the entire community.

(To be continued next month).

AMERICAN-MADE SENSITIZING DYES

BY ALFRED B. HITCHINS, PH.D., AND HOMER A. PIPER, B.Sc.

THE literature dealing with the subject of sensitizing the photographic emulsion to other portions of the spectrum than that to which it is normally sensitive—i. e., from the ultraviolet through the blue—is very extensive. It is not the purpose of this article to discuss the whole subject of sensitizing dyes historically, but rather to bring before the photographic world some of the results obtained within the last two years.

The phthalein dyes—eosin, erythrosin and aureosin—with the exception of erythrosin, have been replaced by dyes obtained from the alkylated quinolins.

Prior to 1914 all of these dyes were made in Germany, and the war cut off the export supply. The two quinolin dyes — pinaverdol and pinacyanol — were the most widely used for orthochromatic and panchromatic work. W. T. Pope, of Cambridge, England, undertook successfully the preparation of these two dyes, the English substitutes being marketed by Ilford & Co. under the trade name of sensitol green and sensitol red. A report on these dyes was published in the *Photographic Journal of America*, 1917, 420.

The investigation of sensitizing dyes was started in May, 1918, by the color laboratory, Bureau of Chemistry, at the instigation of the Science and Research Department of the Air Service. A preliminary report¹ on the preparation of some of the isocyanin and cyanin dyes was made at the Cleveland meeting of the American Chemical Society, September, 1918, and three articles on a

¹ Wise and Adams: Journal of Industrial and Engineering Chemistry, 1918, x, 801.

continuation of the work are appearing in the current issues of the Journal of Industrial and Engineering Chemistry.

The quinolinium dyes used for sensitizing silver halides have been classified by Wise and Adams "into four main groups differing in methods of synthesis, in absorption spectra and in their sensitizing action.

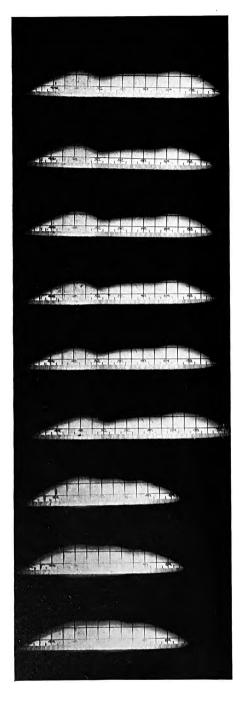
(a) The isocyanins are formed by the condensation of alpha-methylated quinolinium alkyl halides (quinaldin derivatives) with themselves or with quinolinium halides. They sensitize chiefly in the green and yellow.

(b) The cyanins are formed by the condensation of y-methylated quinolinium alkyl halides (lepidin derivatives), with quinolinium alkyl halides. They show marked sensitization in the yellow, orange and red.

(c) The 'pinacyanols' are formed by the condensation with formaldehyde of two molecules of quinolinium alkyl halide, at least one of which must be alpha-methylated. They, too, sensitize in the yellow, orange and red, and have largely displaced the cyanins.

largely displaced the cyanins.
(d) The 'dicyanins' are formed from alpha-y-dimethylquinolinium alkyl halides. They sensitize in the red and infrared. All of these condensations take place in alkaline solution."

The bases used for the preparation of these dyes are:



- 1. Pinacyanol Hoechst.
- 2. Sensitol Red.
- 3. Pc9 3 and 3.
- 4. Pc12_a (chloride).
- 5. Pc12_b (chloride).
- 6. Pc12_c (chloride).
- 7. Pinaverdol Hoechst.
- 8. Pvl5.
- 9. Sensitol Green.

Quinolin and the substituted quinolins are prepared by Skraup's synthesis from anilin, glycerol, sulphuric acid and an oxidizing agent such as nitrobenzene or arsenic oxide.

Quinaldin and the benzene substituted quinaldines are obtained by the condensation of anilin hydrochloride with paraldehyde.

Lepidin is formed by the reduction of lepidone with zinc dust. Lepidone is

produced by the condensation of acetoacetic ester with anilin.

The quaternary iodides are formed by the addition of methyl iodide to the base, usually in equimolecular proportions, for example:

By the addition of silver chloride to an aqueous solution of the quaternary iodides they are changed to the chloride.

Wise and Adams state that reaction in the formation of isocyanins is as follows:

The following is the probable reaction for the formation of the pinacyanols:

Various samples of the sensitizing dyes prepared by the color laboratory of the Bureau of Chemistry were tested by us for their sensitizing value. The following methods were employed:

Stock solutions of both the pinacyanol and the pinaverdol types of dyes were prepared by dissolving 0.050 gm. in

250 c.c. of 95 per cent. alcohol.

Bathing solutions for the pinacyanol type were prepared according to the following formula:

Stock pinacyanol solution			25 c.c.
Water			250 c.c.
Alcohol (95 per cent.)			125 c.c.

Bathing solutions for pinaverdol type were prepared according to the following formula:

Stock pinaverdole solution			38 c.c.
Water	-		250 c.c.
Alcohol (95 per cent.)			125 c.c.

Spectrophotographs were made of the absorption of each dye, using the stock solution (1 to 5000). A standard absorption cell 1 cm. thick was used with the Hilger spectrograph. The exposures were four minutes on a panchromatic plate.

Seed "23" plates were bathed for three minutes at 65° F. in solutions of the various dyes tested, prepared according to the bathing solution formula given above. After bathing, the plates were dried without washing and the color-sensitiveness curves made with the Hilger spectrograph, using a black glass wedge in front of the slit; the exposure given was four minutes. Prints made from these negatives showing color sensitiveness curves are shown in Fig. 1.

Work builds up and makes strong the brain cells; worry wears them out and destroys them.

The man who can work and not worry is rich indeed. The man who worries all the time seldom works—that is, seldom works efficiently and well.

Worry is a disease and should be so treated. It is also a habit and should be crushed early in life.

We are all creatures of habit, like the other animals; and habits grow stronger

For determining the influence of the various dyes on the speed and contrast of plates, as well as for measuring the fog induced, strips of Seed "23" plates were bathed and exposed in the H. and D. machine. The exposures, equivalent to 20 c. m. s. were developed in pyro soda without bromide at 65° F. The light source was a screened acetylene flame.

The following table gives the results obtained:

No.	Fog 3 mins.	Fog 6 mins.	Speed.	Y, 3 mins.	Y ₂ 6 mins.
Seed "23" (unbathed) 1. Pinacyanol Hoechst 2. Sensitol red 3. Pc. 93 and 4 4. Pc. 12 a 5. Pc. 12 b 6. Pc. 12 c 7. Pinaverdol Hoechst 8. Pv 1s 9. Sensitol green	0.050 .100 .100 .098 .100 .098 .106 .114 .112 .076	0.130 .168 .184 .172 .184 .152 .184 .198 .204 .162	175 113 110 117 121 148 126 121 113 139	.96 1.03 .91 .85 1.00 .90 .96 .84 .91	1.23 1.50 1.32 1.45 1.32 1.25 1.47 1.37 1.62 1.36

Conclusions. An examination of the spectrophotographs accompanying this report shows that the Pc12c (test No. 6) is fully equal to the German sample of pinacyanol (Hoechst) and superior to the sample of sensitol red examined. The dye dealt with in test No. 6 is the same as Nos. 4 and 5 (Pc12a and Pc12b), with the exception that the crystals were further purified by washing. From a further examination of the curves it is seen that the pinacyanol chlorides are better sensitizers than the iodides.

The spectrophotographs obtained on the pinaverdol dyed plates are shown under Nos. 7, 8 and 9. No. 8, the Pv1₅, is fully equal to either the German sample or the English sensitol green.

and stronger until they grip us with a strength overpowering.

Money is the goal of every business man; and the more he gets the more he worries, not from fear that he cannot get more, but from fear that somebody else will get it away from him.

The business world is usually hard and cold; and he who enters leaves all hope of peace and joy behind. Why? Because it is warfare from start to finish; and war means worry.

COMMERCIAL PHOTOGRAPHY

Subjects

T is impossible to make even a list of the many subjects which come within the province of the commercial photo-They are as numerous and grapher. diverse as the branches of national industry, ranging, for example, from agriculture and the raising of live-stock to the production of hats or hairpins. Perhaps I cannot do better than quote a list from a number of the *Photo-Minia*-("Commerical Photography"), which, after all, only partially covers the field: "In outside work we have interiors of all classes: homes, clubs, schools, churches, factories, stores, institutions, theatres, steamships, railroad cars, offices —all usually found in cities of larger Construction and archipopulation. tectural work for builders, contractors and architects, including buildings about to be demolished, excavations, construction work in progress, and completed buildings. Architectural detail work also comes into this class. Survey work, photographing the development of town sites, scenic features of a section awaiting development, residences, etc., for real estate firms is an allied branch. Industrial plants, including exteriors and interiors, photographing machinery in situ, in operation, parts of machines, the process of manufacture from raw material to finished product. Railroad work, including construction along the road, bridges, depots, trains, and scenic features for advertising purposes. Agricultural and horticultural work, illustrating the use of machinery in farming, tree and floral culture, landscape gardening and the like. Civic photography, including parks, monuments, docks and public places under development and completed.

Under the heading of studio work we have the photographing of everything made to sell—for the illustration of booklets, advertisements, sample books, etc. The photographing of furniture and woodwork of all kinds; typewriting machines, tools and small hardware, clocks and jewelry, gold and silver ware, bronzes, pottery, chinaware and fancy glass manufacturers, household utensils,

trunks and bags, wallpapers and upholstery fabrics, textile stuffs, linens and laces, gloves, veilings, hats, and so on. A special branch is figure work: the photographing of models for illustration showing the use or attractiveness of wearing apparel or the manipulation of some personal convenience, the way of doing something, such as facial massage, manicure, etc., and pictorial figure work for the reproduction of pictures designed to embellish an advertisement or booklet. Another special class of commercial work is photography for legal or scientific purposes; the copying or reproduction of documents, wills, deeds, disputed signatures, and similar items used in legal evidence, etc.; medical photography, including photomicrography. Museum work, such as the photographing of specimens of all sorts, the reproduction of paintings, photographs of statuary, etc. Then we have the photography of domestic animals, horses, cattle, dogs, cats, birds and the like.

Interiors

Interior views of buildings, large and small, such as banks, stores, factories and comparatively small domestic apartments, are an important branch, where skill and experience score. It is fatal to make the mistake that a backed plate and a wide-angle lens represent all that is necessary in the way of special methods. In this, as in many other branches, the commercial photographer is distinguished from the general worker by the alertness and foresight with which he uses methods and expedients which will yield results of first quality. scarcely ever does to assume that the subject (apart from selection) cannot be improved before the exposure is made. Many interiors—and this applies to both large and small—call for the blocking up of windows during a part of the exposure. A roll or two of black or dark-red serge, as used for the cheap description of curtains, can be used, sometimes inside, sometimes outside. Often this blockingup serves also to allow of the scene seen through the window to be perfectly

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(111)

recorded on the plate by an exposure (after taking down the material) of a second or so. Then many interiors require additional illumination in the dark portions, as can readily be done by the burning of a few feet of magnesium ribbon or the use of a small flash-lamp. The ribbon, on the whole, is better, as it can be waved about, and the illumination thus distributed better. But see that it is outside the field of the lens, and that something is laid on the floor of furnished interiors to prevent accidental damage to a carpet.

Blocking up, too, for almost the full period of exposure is necessary where windows have to be included pretty nearly facing the camera. The disagreeable front lighting of objects in the room is thus avoided. If the other windows are badly placed, some flashlight is often necessary in getting a good lighting. As far as possible the flash should be made to conform with, instead of conflict against, the natural lighting. times, too, an immense improvement can be made in the lighting of the room simply by closing up the window (not included in the photograph) with a sheet of thin muslin, which yields a general diffusion of the light through the room instead of throwing most of the light on parts just opposite the window. Similar improvement in many rooms is made by laying the muslin on as much of the floor as possible out of the field the lens, and thus gently relieving the heaviness of shadows under furniture,

The wide-angle lens is almost a necessity, most customers wanting as much as possible shown in a single photograph, although some are open to the suggestion that two or more views of narrower angle yield a better result. Perhaps the exaggeration of the size of a room which the wide-angle lens tends to produce has something to do with it, but when working with the wide-angle one very necessary precaution is to avoid getting objects of any size close in the foreground Some clear floor should form the foreground. Similarly, keep an eye on pictures, etc., on the walls near the edges of the field, which, when rendered under the violent perspective of a wide-angle

lens, are apt to look most unsightly. Best to remove them or get permission to hang them further back if their inclusion is important. Another thing with a wide-angle lens is to keep the camera low, about 4 feet from the floor, and so to avoid the uphill effect which is seen in many interior photographs.

Reflections from mirrors, polished surfaces on metal plates, or glass, also need to be looked after. Search for them with the eye as close in front of the lens hood as you can put it. Often a slight upward or sideway tilt of a mirror will throw the reflection away from the lens.

Interior subjects where people are constantly passing require to be taken with the lens stopped down to f/64; then, so long as people in light dresses do not halt unduly long in one place, the negative will show no trace of figures. It is hardly necessary to say that exposures of interiors should err, if anything, on the side of overexposure, and development be carefully done (not pushed too far) in order to avoid blocking up of the high-lights. Ample exexposure and unforced development, as every photographer knows, tend to minimize the effects of halation.

Ouite small interiors, such as living rooms in houses of moderate size. boudoirs, etc., are perhaps best done with a smaller camera (half-plate or 7 x 5) fitted with a 4-inch lens. With a stop of f/16 or so, there will be no need to focus after the camera has first been set at focus for say 6 or 7 feet distance. Use a finder fixed to the camera, so that it can be viewed from the side. You can then push the camera right against the wall in or near one corner of the room, adjust the subject by aid of the finder, and be pretty sure that all parts of it will be in focus. By this means it is often possible to get considerably more of the subject on the plate than could be done with the camera in the more forward position required for focussing on the groundglass.

Houses and Gardens

In work of this kind the requirements, as also the photographer's opportunities, differ according as the job is being done for an owner or an estate agent. When working for the former there are plenty of chances for photographing picturesque bits of or around the house, choice examples of flowers or fruit and other things on which the owner sets store. For an agent the chief thing is to get one or, at most, two views which show as much as possible in corroboration of the agent's usually flattering description of a house as a "desirable residence, imposing mansion," etc.

While a wide-angle lens is often absolutely necessary, always bear in mind that, by taking a good deal more trouble, you can often do very much better with one of long focus. Sometimes, for example, you can get a position overlooking the wall of adjoining or opposite premises and thus secure a photograph which is more pleasing in its truthful drawing. Sometimes, also, the higher position is of great advantage in spreading out the plan of grounds or garden; a lower and nearer standpoint inevitably squashes paths and beds of a garden together. Not that an elevated standpoint of the camera is to be generally recommended. So far as concerns the architectural features of a house, they generally look their best when photographed at about the height of a standing figure. The point is that a more distant, though higher, standpoint is very often better than a lower and nearer one. For one thing, the more distant position almost always shows in a better way the surroundings of a house, such as its background of a hill, trees, etc. Very often it shows these features of a residence when the wide-angle view leaves them Sometimes even it is out altogether. necessary for the best result to take a standpoint of such distance that a telephoto lens is wanted in order to get an image of sufficient size on the plate. One instance of this is a house standing on a hill in undulating country. A telephotograph of it from half a mile or so away on an opposite slope will show the special charm of its position as no near photograph could do by including the features of the landscape which, from the higher and more distant standpoint, can be recorded in the photograph.

Strong, brilliant lighting should be

secured whenever possible. It is the strongly marked shadows which show up the beauty of a building having any architectural merit. At the same time exposure should be full for the rendering of detail in the least lighted parts of the subject.

Gardens call for a good deal of careful The ordinary wide-angle treatment. view makes any garden look four or five times its proper size, and at the average height of the tripod it is very difficult to obtain separation of different parts or beds. Here, again, there is much advantage in a more distant and higher standpoint where circumstances allow of such being secured. In the absence of that facility, it is often possible by the use of a few specimen photographs to persuade an owner of the superior effect of a series of narrow-angle views of different parts of a garden in place of one or two wide-angle pictures. In the case of photographs of single beds bear in mind the much finer effects of lighting which are obtained late in the evening, when also the absence of wind renders the work easier.

Shop Fronts

Not easy subjects these. The trouble with them is, first and chiefly, the reflections in the glass of buildings, etc., on the opposite side of the road. This is specially so when the shop-keeper wants a front view. A second obstacle is the passing of people to and fro. The lighting is all-important. It is hopeless to attempt a job of this sort if the shop front itself is in shadow and the opposite side of the road strongly lighted. The conditions require to be reversed, and even then it is often no easy matter to avoid patches of reflection in the window, which look unsightly and effectually hide, in the photograph, the goods which are displayed. Sometimes in undertaking such a job it is worth while to erect a screen of dark material behind the camera so as to cut out opposing buildings. In a busy thoroughfare this can only be done in the very early morning, and often then only by using quite a small stop in the lens in conjunction with a slow plate, and so giving an exposure which is long enough to prevent the passage of people along the pavement from having any effect on the plate. Some prefer for this purpose to use an ordinary slow plate behind a color filter simply for the purpose of running the exposure into minutes. Where no screen is possible, reflections can sometimes be dodged, even when taking a front view, by placing the camera pointing straight toward the shop front but a little to the right or left, and making use of ample cross-front movement on a squarebellows camera. This calls for a lens of ample covering power.

If the contents of a window are thoroughly well lighted by concealed lamps, as is done now by many expert windowdressers, such jobs can be very successfully tackled at night. A color-sensitive plate and a long exposure are called for, and, for securing the facia and outside of the shop building, a supplementary lighting from a couple of magnesium torches (each of four or five strands of magnesium ribbon) requires to be used. Sometimes it is possible to arrange to use daylight for the supplementary lighting by doing the work in the very early hours of the morning, and, without moving the camera, waiting for daybreak as a means of illuminating the outside of the building.

In these jobs it always pays to get the help of the window-dresser, inasmuch as a display of goods photographs much better if placed well forward in the window and if provided with a fairly light background. For example, a tailor's display of men's clothing is made much more easy to deal with by this means.

Paintings

I need not say much on this branch of work, since it is the subject of a very practical booklet. Art and Practice of Photographing Paintings, issued by the Kodak Company. However, I may lay special emphasis upon a few points. Use a lens of long focus. For one thing you often have to photograph a painting which you cannot get near to; for another, you want ample covering power, so it is a good rule to be provided with a lens which is of focal length at least

three times the longer side of the plate. With such a long focus there is no need to stop down in order to get the image sharp to the corners. And that is a great point, because you will find you get better rendering of the tone-values by working (in a good light) with an aperture not smaller than f/8. If the light is good and you stop down, you get the equivalent, so far as results go, of poor lighting. I am speaking now of using panchromatic plates, and I think this experience will be that of most picture copyists, as it certainly is of users of color plates, such as the Autochrome

A K2 or K3 filter, in conjunction with a panchromatic plate, may be said to represent the combination which is about the average in dealing with oil paintings. Special schemes of coloring may require special choice of filter, for example, where deep reds predominate in the painting, effective use can be made of the red filter of a three-color set. tendency with oil paintings is to come out too hard. The exposure they will stand in comparison with a water-color. pastel, or crayon drawing, needs to be borne in mind. These latter will often do with the use of a deeper screen for the purpose of avoiding a flat effect.

In all copyings of paintings the great bane is reflection from the glass of the frame, or, almost as much, from the varnished surface of the painting itself. The effect of such reflection is the appearance of fog in the prints from the negative, and no amount of trouble is too much in order to nullify this reflection at the time of exposure. The most effective means is to erect a big black screen immediately behind the camera, or, better still, immediately in front of the camera, making the curtain in two parts so that the lens can be thrust between the two, and the whole apparatus thus shrouded by the material. the lighting permits of the use of a screen in this way no better means exists of obviating the reflection trouble. Sometimes, however, the use of a screen means the cutting off of the greater part of the available light, in which case it is often possible to use the dodge already referred to in the paragraph on photographing shop windows—namely, to point the camera straight in the direction of the painting, but to place it somewhat to the right or left. By the use of the cross front the painting can be secured centrally on the plate. This calls for a lens of ample covering power, and thus emphasizes what I said just now of the necessity of using one of long focus.

As regards the necessity of getting the plate parallel with the painting (there is no need for the lens to point squarely at the painting so long as plate and painting are parallel), the best form of lighting and the use of color-filters, I may refer to the Kodak booklet.

Perhaps the chief experience which the picture copyist needs to acquire is that of being able to modify his result when it happens that the painter or owner of a picture is dissatisfied with the reproduction. The artist can generally explain

why he finds fault with the monochrome version of his colored original, but usually he cannot say—it is not to be expected that he should—what steps the photographer should take to obtain a different version. After some experience in copying paintings upon the same brand of panchromatic plate, and with the use of one or two filters, the copyist will learn what he can do in the way of emphasizing or subduing, not only the general contrast of the reproduction, but the emphasis which is given to certain colors. In other words, the experience which he will find most valuable in dealing with artists is that which enables him to say that he can make such and such modification by giving less or more exposure, less or more development, or by adopting a greater or a less degree of color-correction.

(To be continued.)

COPYING BY ARTIFICIAL LIGHT

By DAN E. McCASKILL

ONSIDERING the permanent convenience gained from the initial effort in arranging equipment, it seems to me that apparatus for copying has been slighted in the attention of professional workers. Time and money spent on such apparatus may at first seem abnormal, but considering the many times later when even a few minutes are saved, one can see that economy is the result in the end. "The long haul is the profitable one."

Speed, in copying as in other branches, must be considered; then convenience, complicated in many cases by the necessity of reproducing without damaging copy, as in copying from costly library volumes, rare prints and so on. With the equipment described below, the writer has copied double-page pictures from expensive books, the single pages of which measured 12 x 16 inches, with less trouble, so far as placing the copy is concerned, than it takes to pin a loose print on the old-style, soft-pine drawing-

board, and afterward returned the volumes without mar or scratch. Then, too, the system is equally well adapted to copying loose prints of any kind.

Fig. 1 shows a plan of copy frame, front elevation of which is shown in Fig. In Fig. 1 the top board of frame is considered removed, giving a more intelligent view of adjustments. Top, bottom and partitition, A H, of copy frame are grooved so as to receive a clear piece of plate glass, against which copy is The size of the plate glass pressed. depends upon the size of material that the photographer is liable to be called upon to copy. Ours is 18 x 25 inches. R is a hardwood rod set firmly in the base of the frame. On R is fitted a hardwood block, D E F G, the latter being adjusted higher or lower on rod R by means of a wooden thumbnut, B. (Ordinarily block D E F G is kept about midway from top and bottom of copy frame.) Through block D E F G, horizontally, is placed another hardwood

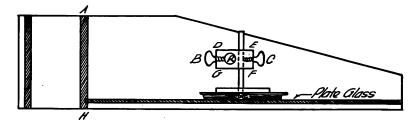


FIG. 1

rod, to the end of which a thin flat piece of wood is firmly fastened. This is seen more plainly in Fig. 2. This rod is adjust-

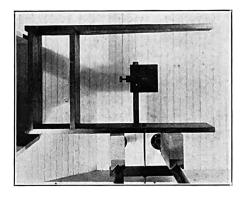


FIG. 2

able horizontally, being securely fastened in any position by thumbnut C. copying from a book, for instance, thumbnut C is loosened horizontal rod is drawn back with flat piece of wood against block D E F G, the book placed against the plate glass, horizontal rod pressed firmly against the book and thumbnut C tightened. This can be done more quickly than it can be described and the result is a perfectly flat page from which to copy. Of course, since the exposure is made through the plate glass the latter must be kept reasonably clean. It is surprising, though, how many smears can accumulate on the glass and never show in the resulting copies. Large maps and other loose copy material can best be handled by pressing a piece of wall board (to be. obtained at any lumber yard), the size of the plate glass, back of the copy. This forces wrinkles and creases out of the latter by pressing it evenly and firmly at all points against the glass.

In Fig. 2 will be seen a front view of copy frame and the method by which the copy frame is bolted to the two 2-inch pipes, about 9 feet long and 10 inches apart, which support it. The two wooden blocks between the frame and the pipes need not be so tall unless the copying camera requires it.

The two pipes also support the camera stand, shown in Fig. 3. Two wooden runners are grooved in a V-shape so as to slide back and forth on the pipes. Across the runners are screwed boards forming a platform through which operates a board L, about $1 \times 4 \times 30$ inches which adjusts the height of the camera. This board L is grooved to fit boards Q and P on either side, and is fastened in

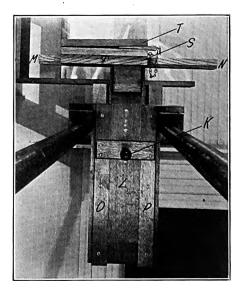


FIG. 3

any position by a large wooden thumbnut K. On top, firmly fastened to board L, is a horizontal board M N, which

measures 1 x 4 x 20 inches, and carries board S, which is grooved, similar to vertical board L, so as to fit around M Nand move horizontally from left to right, or vice versa, along M N. The uppermost board T is hinged at the left end to S, and has a tripod screw inserted so as to take any ordinary camera. A triangular peg between T and S will be noted, serving to tilt the camera and to adjust the image exactly parallel to lines on the ground glass. Thus board L serves to adjust the camera higher or lower with reference to the copy, and board S operating along M N makes adjustments to the left or right. whole stand, of course, moves backward or forward along the pipes. With the possibility of such adjustments by means of the camera stand the copy need not be arranged very carefully, the camera being moved to suit the position of the copy. The practicability of this can be realized when it is considered that the camera adjustments, focus and placing of image, can be made while the operator views the image on the ground glass, without being required to make several trips between the camera and the copy, as he would have to do if he were adjusting the copy instead of the camera.

Complete arrangement of the apparatus is shown in Fig. 4. The incandescent lamp on the right is placed high in order to afford convenient passageway between camera and copy. It was then necessary, of course, to place the other low to balance. This arrangement of lamps affords uniform illumination and eliminates the possibility of roughness or grain of paper marring the reproduction.

The equipment described should be made by a good woodworker, and the lumber used should be well-seasoned hardwood to avoid any slight warping or buckling, which would cause trouble. With a camera which is equipped with rising and falling front the vertical adjustment (board L) of the camera stand might be dispensed with, leaving the horizontal adjustment and the wooden peg convenience for tilting the camera. The camera stand would then be simpler and cheaper to construct. And in the copy frame, Fig. 1, block D E F G and thumbnut B might be

omitted, simply having the smaller horizontal rod placed through the vertical rod R at a point about on the level of the center of the plate glass. In almost every case the rising and falling front of our camera eliminates the use of the vertical adjustments of the camera stand and the copy frame. The other adjustments, however, are used to advantage every time a copy is made.

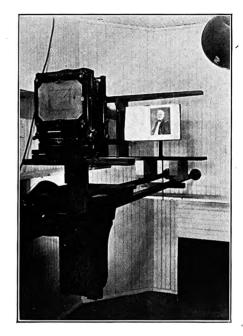
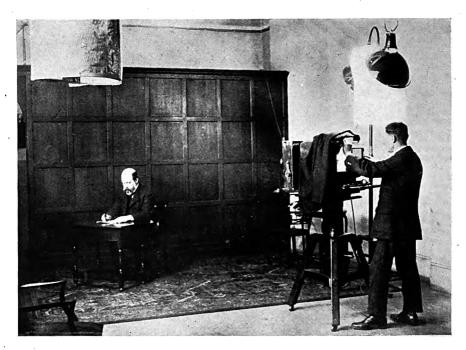


FIG. 4

If occasion demands, the above equipment can be quickly removed and an enlarging camera set in place on the pipes. Space in most studios is at a premium, and the copy frame may be used to hold bromide paper in making enlargements, the paper being placed as was suggested for maps, loose copy, etc.

Now you say, "Too complicated! Too expensive!" Not so. If copying is any part of your business, you will appreciate this equipment as we do. You will make better copies and do them faster. The system has been worked out as the result of needs. If convenience is considered—and speed must be—it has a place in other studios as well as ours.



INSTRUCTIONS IN PHOTOGRAPHY—RIGHT LEG AMPUTATED

OPPORTUNITIES FOR DISABLED MEN IN THE PHOTOGRAPHIC FIELD

By MARGUERITE BALDWIN

MPLOYERS of labor everywhere are evincing a keen interest in the return of our disabled soldiers. Their ranks will provide many valuable and well-trained workers as a result of the policy of reëducating cripples to resume their places in industry. It was in line with this policy of training the men and aiding them in obtaining work that Congress passed the Vocational Rehabilitation Act. According to this act, when a soldier is injured he is placed under the joint authority of the Surgeon-General of the Army and the Federal Board for Vocational Education. Surgeon-General has complete jurisdiction over the disabled man from the time of his injury until his complete restoration to good physical condition, when he receives his honorable discharge from the service. The Federal Board then offers him training which will enable him to return to useful active employment.

after which the United States Employment Service coöperates in finding him work.

In the United States there are fifteen base hospitals with training classes for convalescents, where men begin to learn new trades long before they are well enough to leave the hospital. After they leave the hospital, training is continued at one of the numerous industrial schools under Government supervision. While industrial training is being given he will be paid an allowance, and his family will receive an allotment just as though he were still in active service.

France, England, Canada, Belgium and Italy have well-established schools for teaching new trades to their war veterans, and already many of the graduates have been placed as skilled workmen in well-paying positions. In many instances men are earning more, as a result of the training received, after their

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injuries than they could ever have hoped to command while physically sound but unskilled.

Formerly, handicapped men had to take the first job that was offered, because lacking of training rendered them unfit in most instances for the work they desired. Now they can independently choose their trade, and they are offered more opportunities than ever before. Employers are coming to realize that the disabled man, because of his handicap, is far more likely to be a loyal employee; and that once the man is satisfactorily placed, there is less trouble with labor turnovers.

Photographic work offers an excellent and varied field for the physically handicapped. The work is light and there is little danger of accidents. Furthermore. under the head of photography, there are so large a number of processes that nearly every kind of cripple is physically qualified to undertake some one of them. Men with arm or leg injuries or amputations can do retouching, mounting, spotting or coloring as well as can physically sound men. For the armcripple a prosthesis has been devised for every type of work which will most effectively meet the demands made on the substitute arm in that particular trade. With this prosthesis or work arm the material to be worked upon can be held and the brush can be held with the good arm. The fact that these processes can be done seated makes them suitable for leg cripples. Men with only slight disabilities can successfully undertake developing and printing and even camera operating, though these processes require almost continual standing. None of them requires good hearing, rigidity of posture or extreme physical exertion of any kind, and in only a few instances is stooping necessary; therefore, deafness, head and neck wounds, heart trouble

and abdominal wounds do not hinder a man from efficiently performing them.

As there is always a demand for skilled retouchers, and the training can be acquired in a few months, it offers a very attractive field. A man possessing artistic taste or temperament will be able to use his ability in photographic work. It is a skilled trade and requires several years to master all its processes, but a man can easily become skilled in one process in six months. Having established his apprenticeship in a school he will be capable of competing with any normal workman with the same amount of training.

In May, 1917, the Red Cross Institute for Crippled and Disabled Men of New York City started work with the industrial cripple with a view to paving the way for the war cripple. Classes in printing, jewelry work, drafting, motion-picture operating, oxyacetylene welding and manufacture of artificial limbs were established, also an employment bureau which has placed hundreds of crippled men in industry. Letters received from employers, asking for more of this new type of labor, testify to the satisfaction given in the work of these men.

In an endeavor to interest employers in the handicapped man a survey was made of a great many industries. Leading photographic concerns in New York City were visited and the information gathered will prove of great value in the placement of disabled men.

So great has been the success of the retrained cripple in the industrial world that it is planned to include the industrial cripple in the program of reconstruction. This class is numerically more important than that of the men disabled in battle, and is a permanent and not a temporary class. The general movement for cripple training and employment ought to be of interest to the photographic world.

"The time to hustle for business is all the time; the less business in sight the more you want to hustle."—Dick Sand.

"Responsibilities gravitate to the person who can shoulder them, and power flows to the man who knows how."—Hubbard.



AN UNFAILING SOURCE OF INCOME

HEN business is quiet the photographer will sit around and think up a hundred and one reasons for the falling off in receipts. The weather is either too hot or too cold or it rains or snows. The crops have failed and there is no money for luxuries, or they are too good and there is no time for pictures. But of the many and varied reasons for a slack season we never heard it put forward that the children were not as numerous as ever.

How few photographers realize the possibilities of the never-failing supply of children of all ages and sizes, from the chubby infant to the dainty miss just coming out in long dresses. All of them possibilities of beautiful pictures. Each and every one of them the pride and glory of their proud parents.

Every baby picture in your showcase is a direct challenge to every mother of an unphotographed baby. Is not her pride and joy a better-looking baby than any you have pictured in your showcase? Surely! and you should not have much trouble in persuading her to let you demonstrate the fact.

Real owners of babies will place good orders for good pictures.

To be sure, good pictures of babies are not easily made, but they are worth all the trouble you can take to get them. They are the best kind of advertising. A baby picture will attract the woman

every time, and it's the woman who has the money to spend on photographs. The man is usually too busy getting the money to pay the butcher, the baker and the coal man, to think about the photographer.

There are the seven ages of children, just as of man, and you ought to get them in all the different stages of growing up. If properly trained, many parents can be persuaded to have a picture made on each succeeding birthday. The desirability of this annual record has never been sufficiently emphasized by the photographer. Your desk "tickler" or reminder should automatically advise you a few days ahead that one year ago Baby Brown had his picture made. Many parents would respond to a well-worded invitation to come and have baby's growth in size and increased beauty recorded.

Another advantage about photographing the baby is that he never comes to the studio alone. He is always fairly well attended by several members of the family, offering further opportunities for more business.

The enlarged picture offers an opportunity that is too often neglected. A particularly happy baby pose or expression will often make a charming picture when enlarged. One of the most attractive pictures on Fifth avenue at present is a delightful picture of a baby boy almost life size, sucking his thumb in a most natural and winsome manner.

Cultivate the baby; there are plenty of them, and the supply is unfailing.

THE SHOWCASE

THE showcase represents the beginning and the end of the photographer's efforts—the beginning, because he depends upon it to interest the people passing by his door, who have no other motive to move them in his direction than the effect it may have upon them, first, by attracting, and then by

holding their attention.

It represents the finality of his attainments, because his finished work is necessary before a showcase can be arranged at all, and because the ideal showcase should contain only the best and most perfect specimens of his art that he is capable of producing, which should be culled from the work of months. may readily be seen then, if this view of the subject is accepted, how important a matter it is that the showcase should be studied from every possible point of view, and arranged with the most consummate care and skill.

There are, it may be said, two widely different classes of studios to be considered under this heading, which are capable of treatment by themselves, namely, the large city studio, where the range of specimen pictures is wide, and includes, among other advantages, a wealth of rich costuming, beautiful accessories and charming models, and the less pretentious country gallery, or the studios located in the larger towns and smaller cities. It is not our purpose here to treat of the former class, but to consider more especially the case of the smaller studio, with a view to offering a few suggestions that may be of benefit in making the showcase do more than it does in attracting business-new business, too, it should be in most cases —to the reception room.

In the first place, the size and the style of the showcase cannot be made to conform to any hard and fast rule. Every one should be placed in as prominent a position as possible, and as near the height of the eye as may be. Its size and shape must conform to its surroundings, and the necessities that govern each individual studio. It should be a matter of religious observance, however, that the woodwork is kept well

painted, the glass immaculately clean, and the shelves and contents perfectly free from dust. All these things are easily possible of accomplishment by anyone, and it is almost a foregone conclusion that when any of these details is omitted, and any symptom of slackness is allowed to make itself seen in the showcase, it is a sure indication that the general character of the work, for which the showcase stands, is no better than the symptoms would indicate. There is another point connected with the location of the showcase which has not been mentioned, but which it seems should be of advantage, namely, that in many places it will be easily possible to have a supplementary showcase located in some store or office frequented by the public, and situated at some distance from the studio. In this case, however, a sign more prominent than that used on the imprint of the card mounts alone should form an important part of the exhibit. Having now seen to it that the case itself is well painted and cleaned, the next thought should be for its contents, and for this the greatest care should be used in the selection of its subjects, aiming rather at quality than quantity, but covering as large a field as possible from time to time. This may be done in either of two ways, as, for instance, the display of a certain week toward the end of a school or college term might be kept almost wholly on the line of graduating This, in the case of a man's college, would need something in the way of special attractions to break up its monotony, although in the case of a girls' school a very attractive display could be made all along the same line. Another week, at the beginning of the holiday season or Easter time, might be devoted to pictures of the children—the brightest and cutest collection of the whole year—and other special occasions treated in the same way. Or the case may be supplied during the major portion of the year with a collection covering a wider range of subjects, as, for instance, one or two children's pictures, a few of the brightest and most charming young ladies' pictures, the matron and elderly person, all of which should be chosen with reference to their standing 122 WORK

and position in the community in any cases where these qualifications may be added to thoroughly good technical workmanship. Another plan that works admirably upon occasions is to make several prints from the same negative, using two or three different methods of printing or kinds of paper, in accordance with the facilities of each individual studio, toning them in different colors, trimming differently, some with wide and some with narrow margins around the figure, and mounting them on cards of various shapes, kinds, sizes and colors or one fine colored print. An exhibit of this nature will probably astonish the man who makes it as much as it should interest those who see it.

The case should not by any means be overcrowded; indeed the choicer and fewer the better, and where it is, as frequently happens, a part of the entrance of the studio, occupying the whole or part of the side wall, it should be covered in by glass, and either be painted or hung with cloth or burlap of a color to harmonize with the surrounding decorations. The prints to be displayed should be mounted upon widemargined cards or tastily framed and grouped somewhat irregularly, leaving plenty of space between each and its neighbor, so that no idea may be suggested of their having been huddled together in a hurry.

As a closing maxim, let the showcase tell the story of thrift and good taste, then let the work of the studio verify this story. It is the keynote to your

entire establishment.

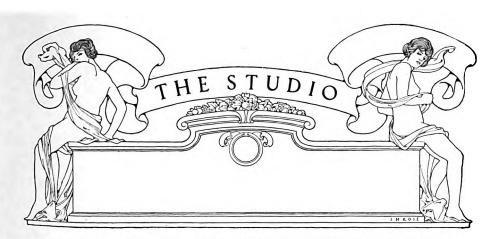
WORK

By EDWARD DE WITT TAYLOR

He builds his temple on the shifting sand Who holds no toil-worn hand within his own; A portless mariner by Fate's wind blown, He wrecks his ship on Failure's deadly land. Who has not high ideals at his command Knows not Creation's joys, nor can enthrone The Mind's high majesty, but walks alone, Nor feels the rupture born of Work's demand.

Then do the thing which Life ordains for thee For its own sake, and set thy spirit free From all that holds thee to the lesser thought; Make of thy task a shrine, and kneeling there Lift to thine eye the thing thy hand hath wrought, And in thy Soul breathe deep Achievement's air.

Printing Art.



PRACTICAL PAPERS ON STUDIO WORK AND METHODS

Photographing Children

THE photographing of children calls for patience and some appreciation of child nature. What can be secured from a grown-up by a simple direction must be drawn from a child by diploment.

diplomacy.

The most telling point in a child's picture should be its naturalness. Mothers, unfortunately, put a handicap on naturalness when they dress children in their best bib and tucker, regardless of the fact that the child is least at ease and natural in clothes it is unaccustomed to wear except on formal occasions. Whenever possible, suggest that the child be dressed in its regular, every-day clothing—something old and soft, and especially something that is not entirely white. white. The most hopeless thing to be up against is a starched dress; it makes a pleasing picture impossible.

After a cordial, not to say confidential, understanding has been established between the juvenile sitter and the photographer, the picture-making can begin. Never attempt to use a black background; it will appear harsh and is unsuited to such unsuited to such subjects. A white canvas background should be used. Any shade from white to almost black Can be secured by turning it to or from the light source. With very young children, whose movements call for rapid exposures, a white cloth a white cloth spread on the floor will help very

Generally speaking, a child should hardly ever be posed. The worst fault in child portraiture is self-consoical. is self-consciousness. Most children suffer from it when act and it it when asked to do anything unusual, and it must be guarded against. The strong-willed child who since the strong was the humored child who simply won't relax must be humored by some imply won't relax must be humored by some imaginary exposures; then when he thinks you are natural, thinks you are through he will become natural, and a few are through he will become made with and a few real exposures can be made with possibly good results.

As a rule, children are best taken in a standing position. They spend so much of the time on their feet, and are more natural standing than sitting. Beyond are more natural standing them standsitting. Beware, however, of keeping them standing too long; ing too long in one position; they soon tire and get hored unt get bored unless there is some action.

Any accessories introduced into the picture should be light in color. The little tables, chairs or stools that have to be used occasionally should be painted white. Accessories, however, should not be introduced except as a last resort; they add to the difficulty of composition and set up a certain amount of competition with the subject.

Lighting and exposure are two important points. The lighting had better be somewhat flat, with top light eliminated. White walls and surrounding screens will help to reduce the exposure considerably and, at the same time, soften the shadows materially. An under-exposure against a white background is apt to show the kiddies' little hands and legs many shades darker than nature and their nationality indicate.

The worst mistake made by photographers in handling children is the lack of appreciation of the child's state of mind during the whole business, from the time of leaving home until the last exposure is made. They are excited with the novelty of the idea. The studio is a place of new and strange sights, and it is not to be expected that the child can be perfectly natural and at home until it has taken in and appraised all the novelties. As the strangeness wears off the photographer can begin to assert himself. This had better be done in a quiet, unassuming way. Bluster and excitement on the operator's part will do more harm than good. Except in the case of very young children, when help is necessary, parents or friends should not be allowed to remain in the operating room. The photographer must have complete control over his sitters. He must then be guided by a quick perception of the character of his little subject. He must know how to subdue the excitable ones and how to draw out the shy. Then with quick, quiet manipulation of camera and plate holders, he must make a series of exposures from which a desirable selection can be made.—Photo. Digest.

Meeting a Change

When the present abnormal conditions come to an end, and there is no longer an influx of "khaki" sitters, photographers must be prepared for many changes in the general run of

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There has been a great accession of female workers in all grades, and it is quite likely that they will retain the positions which they have so efficiently filled for the last few years. Portrait photography is an occupation in which an artistically-minded woman is thoroughly at home, and now that manufacturers have made the purely technical part so simple, there is little that calls for the superior scientific knowledge or physical endurance of the "stronger sex." face of this competition it would seem advisable for the old-established photographer who finds that portrait work is a diminishing quantity to turn his manipulative experience and scientific knowledge in another direction, and to take up the technical and commercial work which will be greatly in demand during the coming period of readjustment of our manufacturers and trade. The first thing to be done is to find out what class of photograph is likely to be required in the district to be operated in, and the next to prepare a set or sets of good specimen pictures. Armed with these the manufacturers and dealers who require illustrations may be approached with some chance of success. One point must not be overlooked: the photographer must create the demand as well as satisfy it. It is of little avail to ask if photographs are wanted; it must be assumed and asserted that they are wanted, that they are indispensable, and that the photographer is at hand to supply them. Another field worthy of more attention than it usually receives is that of outdoor and "at home" work. many districts photographers have been so indifferent to this that they have allowed firms to sweep the country under their very noses, and to take substantial orders which might have been theirs for the asking. This is a field which will not be invaded by the ladies—there is too much hard work about it—and the technical knowledge necessary to carry it out successfully is not likely to be acquired by the present generation. So far, we believe that values and orthochromatics are sealed books to the lady operator, whose artistic qualities are usually her greatest asset.—British Journal of Photography.

Fancy Lighting

ALTHOUGH the "sketch" is a charming style of portraiture, and is likely to hold the field for a long time yet, some contrasting style is necessary as a relief in the showcase and reception room, and nothing answers this purpose so well as the strongly lighted figures, which, with a lofty disregard of the works of the master, are known to most photographers as "Rembrandts." It is scarcely necessary to say that this style is characterized by soft yet brilliant high-lights, limited in extent, and masses of shadow in which the natural modelling is still visible. In some examples the direct lighting comes from behind the face, showing only the profile in full light, while in others it almost approaches the ordinary three-quarter lighting, with the difference that the main source of light is more limited in area and less screened than is usual. Many photographers fall into the error of reserving this style for good-looking sitters, imagining that a perfect

profile is essential to success; but this is quite the wrong thing to do, for it will often be found that it is possible to secure an excellent "fancy lighted" head of a very commonplace and uninteresting model. Inequalities in the size of the eyes, twisted noses, and ugly mouths can be disguised in a way that is impossible with allover lighting, and even a badly shaped nose or chin is readily amenable to retouching. Many photographers who have essayed this class of work have failed for the want of a little thought. Not realizing that the shadow detail was receiving only reflected light they have woefully under-exposed, and in the endeavor to remedy this in development have blocked up the high-lights and produced the result which a genera-tion ago was known as "soot and whitewash." It is safe to give at least double the exposure necessary for ordinary lighting, and to use a welldiluted developer so that undue density of the high-lights is avoided. Metol-hydroquinone or even amidol are excellent developers, pyro-soda unless well diluted, being very likely to give undue density.

Special precautions must be taken against fogging the negative by allowing a strong direct light to fall upon the lens. A deep hood should be provided, and, if possible, the interior of the lens-tube itself lined with black velvet. Above all, the lenses must be scrupulously clean, and the interior of the camera incapable of reflecting any bright image which may fall upon it. Part of the window may be just outside the limits of the negative, but the light may fall in such a position inside the camera that if it is not entirely absorbed it will be reflected in such a way as to cause a general fogging.

The selection of a printing medium is rather important, for it is quite easy to destroy the effect of a good negative by choosing an unsuitable color or surface. As a rule, a perfect matt surface is preferable, and a cold tone is better than a warm one. A pure black or brownish black in platinum or bromide on white or cream paper looks well. If a sepia is desired it should be on the cold side, a warm sepia giving a poor and flat effect, while the warm tones of most P. O. P. are quite unsuitable. We specially recommend this strong lighting for "at home" portraits, not only for the reasons already given, but because the available light is usually well adapted for it. All that is wanted to turn an ordinary room into a "Rembrandt" studio is a black cloth to cover the lower half of the window, with a large white reflector (a tablecloth will do) placed where it will receive plenty of light and direct it upon the shadow side.

These pictures are more effective in large sizes than in smaller ones, and we should not recommend any less than 8 inches by 6 to be exhibited. This takes them a little away from the ordinary competitive lines of cabinets, small panels, and postcards, and consequently a better price can be obtained. It is not desirable, however, to make too high a charge; the price which was formerly obtained for good-class cabinets being perhaps a safe one to fix upon. Bromide paper is cheap enough, and flexible mounts, especially if home made, need cost but little.—

British Journal of Photography.

Construction of Skylight in Confined Situation

A PROBLEM in studio construction which is especially difficult to solve satisfactorily is how to build a skylight to secure the best and most uniform illumination when an adjacent building obstructs the light at the point where the skylight should be located. This is especially difficult when the space between the buildings must be narrow and the obstructing wall is very high.

In extreme cases, perhaps the only satisfactory way to solve this problem is to abandon the idea of having a northern exposure for the skylight and erect an east, south, or even a west light, which we mention in order of preference.

Next to a north light, an east light would be recommended. When this is not expedient, choose the south, and only as a last resort the west light. Just now we are dealing with the question of angles, reflections and refractions when building a north light, and having an opposite building to contend with.

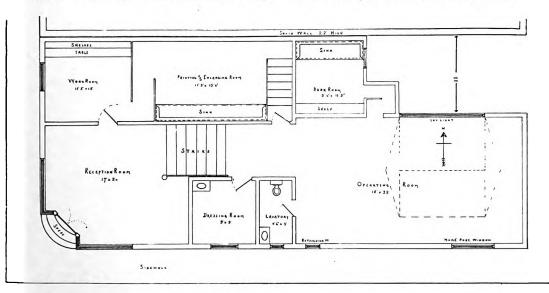
Some photographers, when attempting to grapple with the difficulty, resort to a dependence upon reflected light. They argue that by painting or whitewashing the opposite wall it will afford sufficient illumination. The fallacy of this conclusion, even if the light was reflected into the studio, will be seen at a glance if we remember the axiom that light diminishes in ratio to the square of the distance from its source. Reflected light, therefore, at a distance of four feet from the white wall would be one-sixteenth as strong as the illumination on the wall itself, and at ten feet only one one-hundredth as strong.

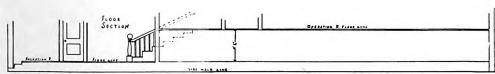
This disposes of the idea of reflected light, for anyone will appreciate the difficulty of trying to work under such conditions, especially in dull weather.

Another thing which is not properly considered is the angle of reflection. The law of reflection is that the angle of reflection is equal and corresponds to the angle of incidence. For example, light striking a white screen, reflector or mirror, at a certain angle, is reflected from such surface at the same angle. Light falling on a surface at an oblique angle is reflected at an oblique angle; if at an acute angle, the reflection is acute, and a right angle reflection only occurs when light falls at an angle of 45 degrees to the surface of the reflector.

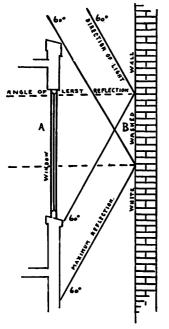
The accompanying drawing will illustrate this. A represents the window or skylight and B the reflector. The straight lines extending upward at an angle of 60 degrees represent the oblique angle of incidence, which is the general direction of light from the sky into the light well between the buildings. The straight downward lines represent the corresponding oblique angle of greatest reflection. The dotted lines show where the photographer wants the most light, but where he really gets the least reflection.

A very good way to secure illumination is by refracted light obtained by means of using prism glass. However, the use of such glass involves a somewhat intricate problem in placing a skylight at the proper angle to correspond to the peculiar angle of the prisms in the glass. We will not go into this matter, as space does not permit, and each case presents an individual problem.

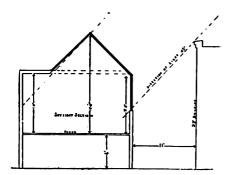




The most practicable and feasible method of overcoming obstructions is to elevate the studio—in other words, to rise above your troubles. This is easy where one can build a two-story studio. If placing the operating room on the second floor does not lift the skylight quite high enough to get unobstructed light, the operating room floor may be raised a couple of feet above the rest of the second floor.



In the case of a ground-floor studio with an adjoining two-story building on the north side, the main portion of the studio, including reception room, work room, etc., would be on the ground floor. Back of this, and several feet higher, the operating room should be built. And by placing skylight as far as possible from the adjoining building, and having the floor elevated, the obstruction is overcome.



To illustrate a specific case, we will suppose a photographer in a small town has a corner lot, with a thirty-foot frontage and a sixty-eight-foot depth. Next to him on the north is a building

twenty-two feet high. The photographer in this case would overcome his trouble, secure good illumination and really have a most attractive studio by building somewhat in accordance with the plan which we print herewith as an illustration.

By having the operating room up a short flight of steps a certain seclusion is secured and an air of elegance is given to the entire studio. At slight additional cost a basement storeroom could be made under the operating room. It will be seen that the space between the buildings is great enough for the light to pass over the building and illuminate the skylight at its lowest point.—Studio Light.

Photographers' Removals

WHEN for any reason the photographer is removing to other premises, it is noticeable that in most cases the autumn or winter is chosen, doubtless because what is commonly a slack period is considered a convenient time for such an undertaking. It may not, therefore, be unseasonable to offer a few practical warnings regarding certain pitfalls and dangers incidental to the removal of photographic apparatus.

Even with ordinary household furniture removals are to be dreaded, as not only a source of unspeakable discomfort, but as affording endless opportunity of injury to cherished possessions at the hands of hurried or careless workmen. That being so, it should be fairly obvious that the chances of damage are greatly multiplied where such fragile things as cameras, lenses and similar photographic appliances are concerned. Yet we have known numerous instances of serious loss having been incurred through the treatment of expensive objectives and slenderly built apparatus with no greater care than falls in the ordinary course to a heavy brass bedstead or a massive dining-room table. In one casean awful example of what to avoid-two valuable Dallmeyer objectives had been placed in a soap box, with merely a little loose newspaper around them, and the lid tied perfunctorily across with thin string. No label or other indication of unusual care being necessary was affixed, nor was any remark made to the workmen. The latter, possibly, had served an apprenticeship as railway porters, though the precise method of the disaster was never really cleared up. Any-how, one lens was completely shattered, while the other was so badly damaged that \$25 had to be expended to restore it to working order.

Such unfortunate happenings are easily avoided by the exercise of a little anticipatory common sense. Well ahead of removal day, a number of good, sound boxes of different sizes should be procured from the nearest oil-shop, giving them a thorough cleaning to remove any grease or dirt. The various cameras, lenses, etc., should be placed in these, taking care that they are well bedded on closely packed wads of paper, cloth or felt, and having similar wads rammed in tightly all round, so that movement is impossible, however the box may be shaken. After placing a final layer of packing on top, the lid should be firmly nailed on, the box securely corded with rope, as used for trunks, and several

"with care" labels conspicuously displayed out-

Backgrounds should be carefully rolled up, wrapped round several times with stout paper, and finally inserted in waterproof coverings of oilcloth or similar material, made for the purpose on the principle of an umbrella cover. Several backgrounds may be firmly lashed together, if desired, and enclosed in a single cover. The foregoing may seem an unnecessary precaution, but such is not the case. An instance occurs to mind where a number of nearly new backgrounds were almost ruined through being carried outside on the top of a pantechnicon in pouring rain. An identical device is worth adoption for the protection of studio blinds in transit.

Such important items as the bulbs of mercuryvapor lamps, needless to say, require the most delicate attention. It is perhaps as well if the owner keep these under his personal supervision till safely housed. Electric globes, enlarging condensers, reversing prisms, thermometers, etc., call for painstaking packing; the same may be said of porcelain dishes, glass graduates and measuring jugs. Unexposed plates, if such must be carried, should not only be secured against breakage, but against inquisitive handling. Quite recently a West of England photographer trusted the carriage of several score of unexposed plates to nothing more than the ordinary lighttight wooden plate-boxes with sliding lids, fastened with brass turn-catches. Without making any allegations, it may be remarked that every plate proved on exposure and development to be fogged.

A large collection of negatives often makes itself somewhat of a nuisance when moving, and it is a moot question whether it is always worth while transporting them. This is a matter that must be settled according to individual circumstances. Many of them may doubtless be "scrapped" with but a trifling and remote prospect of any loss accruing, but more recent negatives, and all having possibilities or likely to be of value as specimens, should certainly be kept. A great deal, of course, depends on the character of the business and the distance of the removal. It is generally worth while to notify past customers, in a courteous and nicely got-up circular, that negatives of themselves or relatives are in store, and will be destroyed prior to removal unless a wish is expressed to the contrary. Besides advertising the new address, this usually brings in a remunerative proportion of re-orders.

Perhaps the best method of packing negatives for removal is in the original cardboard plateboxes, ramming in paper or wool so that shaking is prevented. When a number of boxes have been prepared in this way, and tied tightly with string, these in turn are packed in larger wooden boxes, well padded as before, nailed up, corded firmly, and labelled conspicuously, "Glass, with care." A breakage under such conditions is highly improbable. The ordinary grooved negative boxes allow too much rattling to be quite safe for removal purposes.

Specimens of all kinds should be well guarded against rain or damp. If this precaution is omitted, and it happens to be a wet day, much injury may result merely while placing in and

taking out of the van. The mischief that can be done by a steady downpour, even in the brief passage from doorstep to tailboard and vice versa, must be seen to be believed. Chemicals and solutions should be tightly corked or stoppered and placed in wooden boxes with ample wadding or packing between them. Corrugated cardboard is frequently very useful in this connection. Clear indication should be placed outside the box as to which is the right way up, and the workmen's attention should be specially called to the contents. It is risky to attempt the transference of any large quantity of strong acids, such as sulphuric, nitric or hydrochloric,

with other goods.

Another hint that may be given is to take the handles off any machine that is operated by turning-burnishers and dry-mounting apparatus, for example—and to pack these separately out of the way. This prevents anyone experimenting with them, to their probable detriment. The rollers of burnishers should be closely tied up in cloth or wash-leather. Loose screws, tripod screws, and small parts of every description, whatever they may belong to, should be put together in one receptacle, so that there may be no difficulty in finding them when required.

Regarding studio furniture little need be said, as it nowadays differs but slightly from the ordinary variety, and may be treated in practically the same way. When the photographer has his home on or adjoining the studio premises, and household goods have to be removed at the same time, it is strongly advisable to leave the photographic apparatus to the last. This means less likelihood of other things being placed on the top of them, and also ensures that they will be taken out first.

It is more important than might be thought to employ only a removal firm of recognized local repute, who are specialists in that direction. On no account should anyone be engaged who "undertakes" removals as a sideline, in addition to some other normal occupation. Such contractors are sometimes careful and trustworthy enough, but quite frequently their workmen are absolute amateurs at handling and transporting goods of any kind, and the photographer will find his chances of damage considerably increased.

It is advisable to make an inventory of the goods, and to verify it at the earliest opportunity, as the smaller articles have a knack of getting mislaid or lost, and these are often the most valuable. An instance occurs to mind where an anastigmat in a leather case was discovered in the sacking at the bottom of the van some weeks after the removal, and brought back-wonderfully enough, quite uninjured-by one of the workmen. In another case, a box containing a set of optically worked light-filters was inadvertently left behind at the old premises, and ultimately found in the dustbin.

As a concluding hint, it may be stated that it is better policy, where photographic goods are concerned, to engage the contractor by the hour rather than by the "job." It may, and most likely will, cost a trifle more, but the work will be done in a more careful and less hurried fashion, and with far less likelihood of injury or loss .-

British Journal of Photography.



Kodak Advertising Contest Awards

THE pictures entered in the 1918 Kodak Advertising Competition have been passed upon by the judges and the prizes have been awarded for those pictures which, in the minds of the judges, presented the most forceful arguments for the sales of Kodaks or Kodak accessories.

There were fourteen prizes divided into two The list of those who won the prizes classes.

follows:

Class A. First, William Shewell Ellis; second, W. Weiseisen; third, Edwin G. Dunning;

fourth, R. T. Dooner; fifth, George J. Botto; sixth, J. W. Weiseisen; seventh, W. B. Stage.

Class B.—First, Florence N. Conaghan; second, George H. Seip; third, William C. Motteram; fourth, George W. French; fifth, James J. Ryan; sixth, Edwin S. Culver; seventh, John

S. Neary.

The judges were: E. B. Core, photographer, Yonkers, N. Y.; L. á Hiller, photographer, New York City; J. D. Ellsworth, advertising manager, American Telephone and Telegraph Co., New York City; Don M. Parker, secretary, Century Co., New York City; W. R. Hine, vice-president and general manager, Frank Seaman, Inc., New York City.

National Convention for 1919

THE National Board of the Photographers' Association of America met at Cleveland, Ohio, January 12, 13 and 14, and put in three of the busiest days that the Board has ever known, in a review of the year's work, in plans for 1919, and in preliminary arrangements for a National Convention for this year.

It was the unanimous opinion of the Board that, despite the fact that the impress of the war is still with us, the photographers of America are hungry for a national conclave and, therefore,

decided that one should be held.

In view of the fact that the 1919 convention will no doubt bring together the biggest gathering of photographers that was ever known, it was found to be expedient to delay final selection of a site for this convention in order that no one should be overlooked, and in order to insure the comfort and welfare of those who attend, it was decided to delay announcement (128)

of the final selection of a site until a later board meeting, at which time a complete program for the convention will be announced.

It is thought that the date to be selected will be the fourth week in July. The convention will cover a period of five days, and will be at a point favorable to the attendance of a great number of photographers.

Representatives of the Manufacturers' Convention Bureau were in conference at Cleveland with the members of the National Board, and assured the latter that the manufacturers would give their unqualified support to the National Convention, as well as to the amalgamated conventions that will be held throughout the year.

The convention program is being prepared along lines that will make it the most unique that has ever been presented by the P. A. of A., and every member of the society is urged to go to work now on prints to be exhibited at the convention. The rules and regulations for the print display will be the same as those prepared for 1917 convention.

Photographic chapters of the P. A. of A. are urged to organize for this great conclave, by the appointment of committees to encourage print exhibits and more particularly to form clubs within the chapter that will organize groups from each city to attend the National Convention.

The National Board directed the general secretary to take up the matter of vocational education of photographers coming out of service to insure that their training shall be along the lines to best fit them for work in the portrait and commercial studios of America.

The board also voted to make the P. A. of A. a member of the U.S. Chamber of Commerce.

The Congress of Photography will meet in connection with the annual convention and the presidents of the amalgamated bodies are urged to name two delegates from each State to sit in the congress.—Association News.

Flashlight Portraits

Editor Photographic Journal of America. DEAR SIR: I was quite interested in reading an article by an unknown author, published in Photography and reprinted on page 32 of the January number of your excellent magazine, under the heading, "Flashlight Portraits."

The author, after calling attention to the unsatisfactory results which have followed from a failure to comprehend the proper methods for using the flash as an illuminant, correctly says: "It cannot be laid down too emphatically that they are the results not of the *use* but of the *misuse* of the flash," and he also correctly indicates that, properly handled, the flash is capable of producing results that cannot be distinguished as flashlights-to which I would add, except by their superiority—and in many cases securing charming results which it would be impossible

to secure in any other way.

I must, however, dissent most emphatically from the statement made that "the quality of the results obtained does not depend upon the choice and use of the slow-burning magnesium powder, or the fast flash compound." I believe it to be impossible to secure results in portraiture with the magnesium powder burned by blowing it through a flame, and which therefore must of necessity produce an exposure of one or more seconds in duration, can ever be equal in quality to those produced by an instantaneous flash, or a flash made by a compound which is completely consumed in one-thirtieth to onesixtieth of a second; for the reason that in the use of the former, or of sheets, or of any other slow-burning illuminant, the subjects will usually, if not invariably, squint or close their eyes during the exposure, or at the instant the strong light appears, and in many cases the closing of the eyes will be accompanied by other movements which ruin the result, these movements being involuntary and uncontrollable.

The momentary closing of the eyes (or winking) almost invariably occurs also when the fast flash compound is used, but in one-thirtieth of a second the light has done its work and vanished before the wink could occur, hence no harm has

resulted.

The foregoing facts have become so generally known throughout the United States that to the best of my knowledge and belief magnesium powder is never used in this country for portrait work, and I can conceive of no reason why it should be so used in any country where a good reliable flash compound with a speed of onethirtieth of a second, or higher, is procurable.

I concur heartily with the points made in the article regarding the size of rooms used, the color of the walls, and especially to the importance of the position of the flash vertically, at 45 degrees, which means that it should be as much higher than the head of the subject as it is distant horizontally, or as nearly so as may be practicable under varying conditions, but I cannot agree that it should be "six feet distant" for a bust portrait. Much softer and more harmonious blending of the lights and shadows will be securd by placing the diffusing screen three feet from the subject, and the flash

a foot or so back of that.

The article also states: "A serious difficulty in all flashlight work is that the lighing effect cannot be properly studied beforehand." He seems to have been unfamiliar with the Studio Flash Cabinet which has been in use in many

studios throughout the United States for years, which is a combination of electric and flash lights, and which enables the operator to see, and to modify his light effects at will the same as when using daylight, and which also gives him the advantage of an instantaneous flash with which he secures fully timed negatives, without any blur of movement, every time he makes an exposure, even though the subject, whether child or adult, was not perfectly still when the flash was produced. In other words, the operator never loses a plate because of a movement of his subject or on account of a loss of expression, and which also confines completely and does away with the smoke annoyance. Similar devices which are portable and designed for home portraiture have long been used in this country with the most gratifying success.

On the whole, the article, while giving some good points, indicates that its author was considerably behind the "state of the Art" which

has been attained in this country.

Very truly yours, JAS. H. SMITH.

Minneapolis Photographers Organize

On Monday evening, January 13, there was organized at the Hibbard Studio, Minneapolis, a new Photographic Club to be known as the Photo Craft Club of Minneapolis.

This will be purely a social club and everyone who handles a camera, professional or amateur, or who is in any way connected with photography or the photo supply business in the city of Minneapolis is eligible and invited to join.

The entire yearly dues will only be 25 cents per month or \$3.00 per year.

The following officers for the ensuing year

were elected:

President, Carl Wunderlich; Vice-President, Peter Hauenstein; Secretary, F. O. Nordin; Treasurer, C. J. Hibbard.

Photographers' Club of Toledo

A DEMONSTRATION of the use of artificial lights on models by Mr. D. D. Spellman, of Detroit, Michigan, President of the Ohio-Michigan-Indiana Photographers' Association, was a feature of the January meeting at the studio of Mr. C. L. Lewis, Toledo. Many novel and unique lighting effects were brought out during the evening.

There was considerable discussion as to the advisability of photographers cooperating to set styles in photographs, the same as in other lines of business, which brought out many good

points both pro and con.

There was a large attendance at what might be considered one of the best and most enthusiastic meetings held in some time by the oldest professional photographers' club in the United

> L. G. Rose, Secretary and Treasurer.

Pictorial Photographers of America

The meeting of the Pictorial Photographers of America, held on February 3, 1919, at the National Arts Club, New York, was devoted, principally, to gum printing and prints. Dr. Charles H. Jaeger showed a number of pictures, done in this medium, from his films made with a quarter-plate camera, the prints being the original size; also some larger ones, the work of Mrs. Doris U. Jaeger. The doctor also gave a demonstration of the process, as far as possible, from the mixing of the coating solution, through development to completion, all of which proved very interesting and instructive.

Mr. William G. Shields exhibited some small gum prints, in various colors, and many large ones in multiple printings; in some instances, made from enlarged paper negatives. Much valuable information was imparted by Mr. Shields as to the technic of the process, his excellent pictures, tastefully mounted, serving.

as examples.

Mr. Clarence H. White concluded a most profitable and enjoyable evening by stating how he taught gum printing at Columbia University.

This Association is becoming continually more popular; and the attendance at its meetings so large that they are now transferred to one of the larger halls at the National Arts Club.

The meeting of the Association to be held on the first Monday in March will take place at the Washington Irving Gallery, No. 122 East Seventeenth Street, in conjunction with an exhibition of bromoil work, and a display of lantern slides produced by Francis O. Libby and Dr. Rupert S. Lovejoy, both of Portland, Maine.

The Centenary of Hypo

THE year 1919 marks an interesting centenary in the history of photography. It was in 1819 that Sir John Herschel discovered the solvent power of sodium hyposulphite upon the salts of silver, and published his discovery in the Edinburgh Philosophical Journal. Twenty years later in a further communication he announced the use of sodium hyposulphite as a fixing agent; but the story of most discoveries is not so much the story of one isolated event as of a sequence of events, the earlier of which are often quite obscure. Certainly no proper historian of photography will begin as late as Daguerre, who did not start his photographic work until well on in the twenties of the last century; nor could Herschel claim to be the first in view of what Wedgwood did many years before the coming of hypo; but seeing that hypo may be called a pivotal" substance in the photographic process, it seems reasonable to place a red mark against the year 1819, when its all-important characteristic, so far as photographers are concerned, was first known.

A New Convenient Dark-room Lamp

THE subject of dark-room lighting is an old one but, is, nevertheless, one in which every photographer is vitally interested.

In the past, the use of natural-colored-ruby

electric lamps has been limited on account of the difficulty in obtaining them. The illumination secured in many cases was unsatisfactory in that the lamps were too bright for sensitive plates and films but not bright enough for convenient working of papers.

These objections can now be entirely overcome by the use of an All-Nite-Lite transformer with its lamp dipped three or four times in standard sign lamp-dip to obtain the desired shade of

red, ruby or yellow.

The All-Nite-Lite transformer is a small device about the size of an ordinary lamp, which may be operated from alternating current lighting circuit. One end screws into any handy lamp sockets; the other end contains a miniature socket for the colored lamp. The device is compact and presents a neat and finished appearance. Both transformer and lamps may be obtained from electrical supply dealers in any part of the country.

A very convenient outfit consists of one All-Nite-Lite transformer with one ruby and one yellow lamp; the ruby lamp for plates, films and bromide papers and the yellow lamp for the various "gaslight" papers. With these combinations the light produced is sufficient to enable the photographer to do his work satisfactorily and yet run no risk of fogging his plates or films. The cost of operation is negligible, which makes this device equally desirable for both amateur and commercial photographers.

A New Transfer Process

A DEMONSTRATION of a new photographic transfer process was given at the first meeting of the Royal Photographic Society of Great Britain, by Mr. F. W. Kent and Mr. T. P. Middleton. Their view of an ideal process was one in which the support should be textureless and translucent, little affected by damp, and without tendency to tear, with an emulsion which should part with facility when transferred, and yet be so adherent as to be without danger of frilling or self-stripping. They have found that paper impregnated with paraffin wax most nearly fulfils the conditions as to support, and have devised a substratum consisting of a powdery nitro-cellulose deposited from an aqueous ethereal alcoholic solution, which enables any sensitive gelatinous material to be coated upon it. The paper is treated exactly as ordinary bromide or gaslight paper; but, in order to avoid lateral reversal on transfer, the usual procedure on printing is slightly varied, the paper being placed in the frame with its waxed support next the negative. authors proceeded to demonstrate how prints were transferred onto diverse surfaces. For the large majority of surfaces all that was necessary for single transfer was a 5 per cent. solution of soft gelatin, a pool of which was placed in the center of the surface to which transfer was to be effected; subsequent operations were the placing in contact, light squeegeeing, and, after drying, the stripping of the print.

Fourth Annual Convention and Salon of the Photographers' Association of the Middle Atlantic States, Hotel Schenley, Pittsburgh, Pa., March 18, 19, 20, 1919

Rules Governing Awards

Portraits may be framed or unframed. Three portraits shall constitute an exhibit, except special prizes; awards to be based on the highest rating of the three portraits. No names or identification marks to be on face of portraits. Enclose card or name and address with exhibit, specifying the class in which they are entered, which will be placed with your exhibit after they are judged and hung.

A fee of two dollars must accompany all exhibits for the Grand Prize, which carries with it a membership in the organization for one year.

Exhibitors in all other classes must be in good standing in the Association, except Special Classes.



POSTER

In order to stimulate interest in the profession at large and especially in the membership of our own jurisdiction to making better portraits, thereby assuring larger exhibits at this convention, the officers have adopted the Medal Plan. It is an accepted fact that most of the men who enjoy national reputations in our profession today, earned them through the information and special efforts put forth in producing Gold Medal Portraiture. The same principles hold good today. We are standing in the vestibule of a new era and it is up to you, Mr. Photographer, to open the door and walk in. You will find a classification of awards published in the Bulletin of Photography. Study them, select the classes in which you are eligible to compete. Start today, produce the very best you are capable of, and you will be a winner, whether you pull down a medal or not.

The world is entering into a period of reconstruction. The photographic profession will have its share in these coming changes. New

ideas, new methods, will be necessary for the successful man of tomorrow.

This Convention is planned to furnish educational and practical service just along these lines.

Program

The program will be announced in detail in future publicity. By personal request, we are withholding some names, but here are a few of those who have contracted to be with us: S. B. Hord, J. E. Mock, Howard Beach, Will H. Towles, Clifford Norton, Ryland W. Phillips, Captain Edwin H. Cooper, H. G. Stokes, Mabel Cox Surdam, Emme Gerhard, Della B. Hays and Katherine Jamieson.

Convention Headquarters

The Hotel Schenley is one of the most exclusive and fashionable hotels in the country, located at the entrance of Pittsburgh's greatest park and surrounded by the greatest group of educational and art institutions to be found in the country. Among them are the Carnegie Library, Museum, Art Gallery, Music Hall, University of Pittsburgh, Carnegie School of Technology, Margaret Morrison School, Pittsburgh Athletic Club, Masonic Temple, Memorial Hall, Syria Temple and the University Club.

Entertainment ·

As host to this Convention, Pittsburgh is preparing to show our guests the best time ever. Our Ladies' Executive Committee is planning on an elaborate scale for the entertainment and comfort of all the ladies who attend the Pittsburgh Convention. One entire session of the program will be devoted to demonstrations, studio management and business methods as employed by some of the leading women in the profession.

Picture Exhibit

We want this Convention to be remembered for its large display of portraits. We want every photographer in our jurisdiction to send at least three portraits for this display. The officers are making a personal appeal to one hundred of the leading photographers in the United States and Canada to send a complimentary exhibit of some of the best portraits they have ever produced. Let every one contribute to the success of this Convention by complying with this request.

Remember the dates and plan now to attend the Biggest Convention of the kind ever held.

A Giant Telescope

THE Observatory at Mount Wilson, California, houses the largest telescope in the world, one which puts the Parsonstown giant of Lord Rosse in the shade, in point of size, to say nothing of its finer quality, which modern methods of construction have rendered possible. The new telescope is a reflector; that is to say, instead of a lens as object glass, it has a concave mirror of silver on glass, the working diameter of the mirror being 8 feet 5 inches. The history of the huge mass of glass, weighing several tons,

from which this mirror was ground, is very interesting. Only one firm of glass makers, and that a French one, were willing to contract to supply it, and after several attempts the glass was cast and annealed, and despatched to California. When work upon it was begun it was found to be defective, and was accordingly rejected. Fresh attempts to make the glass were then made, but met with repeated failure. This caused a further examination of the first piece; and as there seemed to be a reasonable hope that the defects did not extend so far into the mass as to be quite prohibitive, work was started on it again. The attempt justified itself; the mirror was completed, the building and the mechanism of the telescope to take it were constructed, and it is now undergoing its final adjustments and trials before being put to a definite line of work.

Photographic Developing Agents

PHOTOGRAPHING Developing Agents; Examina-—. H. T. Clarke. Communition of Organic cation from Eastman Kodak Research Laboratory, British Jour. Photography, 1918, lxv, 499-503. A scheme is outlined for the identification of 16 of the commoner developing agents, arranged in 4 groups according to their solubility in water, ether and alcohol. Detailed descriptions are given of the characteristic reactions of each for qualitative examination and methods for quantitative estimation of most of them, both singly and in mixtures. A number of typical analyses of developers actually on the market are also given showing in some cases a very considerable deviation from a reasonable standard of purity. For example, a developer containing over 50 per cent. of lead chloride; a developer "identical to metol" containing 52 per cent. of quinol and only 32.8 per cent. p-methyl-aminophenol sulphate: metol substitutes containing respectively 33 per cent. of sucrose, 25.5 per cent. of pyrogallol with 73.4 per cent. of sodium sulphite, 85 per cent. of ammonium p-toluene-sulphonate, and in two cases no methylated product at all. Numerous other adulterants were found, a list of twenty-five being given, including starch, sucrose, citric acid and various inorganic salts.

The Successful Man

HE pushes for more business in busy seasons, and, if customers are scarce, still pursues.

He practices strict economy and does not condescend to penuriousness.

He pays promptly and collects as he pays,

rather than pay as he collects.

He is courteous in manner and appreciates

the commercial value of cordiality.

He is honest, not from policy, but from principle; he considers success lacking self-approbation as failure in disguise.

He thinks first and deeply; and speaks last

and concisely.

He possesses executive ability to a degree which renders him appreciative of the most valuable points in employees.—Backbone.

Patents

Color Photography. F. E. Ives, Philadelphia, Pa. U. S. Pat. 1,278,667, 10.9.18. Appl., 20.2. 17. Two color-selection negatives, e. g., red and green, are first obtained. From the "red" negative is then obtained a blue-green positive and from the "green" negative a diapositive in some suitable color contrasting with the blue-green. The blue-green film is then resensitized, exposed through the diapositive in register with it, and the image toned red.

the image toned red.

Color Photograph or Film and Method of Producing the Same. F. E. Ives. Philadelphia, Pa. U. S. Pat. 1,278,668, 10.9.18. Appl., 9.10.17. A transparent support provided with a film containing a sensitive silver salt is exposed through the support, developed, etc., then resensitized, exposed on the face and developed to form a blue-green image. The silver image at the back is then copper-toned to a red color.

Colored Photographic Images; Process of Producing —. E. R. Bullock, Assignor to Eastman Kodak Co., Rochester, N. Y. U. S. Pat. 1,279,248, 17.9.18. Appl., 7.3.17. A metallic image is oxidized and then reduced by an organic compound which forms, in the reduction process, an insoluble colored compound. For example, a silver image is converted to the ferri-cyanide by the action of potassium ferricyanide and permanganate and then reduced by benzidine chloride. The silver salt is removed by fixing in "hypo" with the addition of a small quantity of an oxidizing agent such as chromate.

"Lantern Slides"

A NEW booklet, "Lantern Slides, How to Make and Color Them," has just been received from the Eastman Kodak Co. It contains instructions for making slides by the most approved methods, also a number of toning processes worked out in the Eastman Research Laboratory, including the new dye and dyetoning methods with the aid of American-made dyes. The process gives novel and pleasing results. If you are interested in making slides this booklet will be of value to you.

The Wellcome Exposure Record and Diary

ONE of the most useful and practical little books of reference for photographers in general and amateur photographers in particular is the Wellcome Photographic Exposure Record and Diary, the 1919 edition of which has just been issued. The familiar little green-covered wallet contains, in addition to a diary and a ruled exposure record for negatives and prints, a brief guide to photographic practice, more particularly in relation to the use of "tabloid" chemicals. In addition to this, the Wellcome Exposure Guide and Calculator are included, giving reliable and practical advice on exposure for every variety of subject under every kind of condition with plate speeds and examples. It would be difficult to find a greater mass of information useful to the camera user in so small a compass as in this little annual publication, and with the present high prices of materials its value as an accurate guide to economical working will be appreciated. The price is about 40 cents per copy.



THE WORKROOM

By the Head Operator



Some Points in Strip Printing

THE proprietor of a photographic business nowadays is faced with numerous difficulties. By some marvellous or, we might say, mysterious methods, manufacturers of plates, papers, mounts, chemicals, and the various other essentials of the art have been able not only to produce supplies in sufficient quantities, but to improve in many cases materials for which we were almost entirely dependent upon our enemies abroad. This laudable success on the part of our manufacturers has happily removed what proved to be one of the gravest stumbling-blocks in our profession soon after hostilities commenced. Unfortunately, however, the problem of efficient assistance is becoming more acute and pronounced from day to day. True, ladies have nobly come to the rescue in all spheres of industry. In our own "sphere" they seem to shine most as retouchers. Prior to the war the lady operator was the "rara avis" of photography; she was occasionally met with, but not often. In fact, her value in that capacity was rather underestimated. What we really do suffer from is the inadequate number of printers. A glance at the vacancy columns of this journal, or any of the other advertising mediums of importance, will at once reveal the fact that printers are by far the most wanted of assistants. The fact that operators are mostly men of mature years, while printers are of comparatively youthful age, explains why the former are less disturbed and why the ranks of the latter have been so seriously depleted.

Commercial Strip-Printers

It would perhaps be fitting, then, to give a few words of advice from first-hand knowledge of up-to-date printing to those who have taken up this branch of our business. I refer to bromide printing only, solely for the reason that this medium now covers to a considerable extent the requirements of many studios. True, in a few workrooms one may still find the old method of printing in "singles," but fortunately this prehistoric practice is almost obsolete. Every business that is not a "one-man concern" and is turning out a fair amount of work has one or more strip-printing machines installed. There are now many types of these machines on the market.

A Stop for the "Pawl" Printer

In the first place, care should be taken that a small piece of wood is screwed on the table to act as a permanent stop, or buffer. This ought to be fixed on the exact spot where the end of the travelling wooden bar rests in its normal (134)

position, ready to take the first print. This ensures that when the bar is returned to give the first impression on a new strip it will not encroach on the second print, thereby spoiling both. The next worry to the would-be quick printer is suction. This occurs when the pressure-pad is hastily raised, for unless care is taken, many negatives may be broken. The danger is very easily averted by placing one or two fingers of the left or free hand on the back of the strip, close up to the pressure-pad. These fingers are only raised slightly to enable the strip of paper to be carried on to its next position. By doing so, you overcome this suction, and the negative remains in its required position, no matter how rapidly the pad is raised.

Care must also be taken to prevent double or blurred impression. This fruitful source of "shorts" is caused by permitting the paper to lie exposed to the red pilot lamp inside the exposing box. This lamp may be safe enough when new, but the spirit stain with which it is tinged soon fades and permits the transmission of actinic rays, thus creating the damage referred to. It is therefore advisable to run through the strip and remove it first, no matter what interruption may occur.

Humoring Negatives

I strongly advise the worker to master the use of tissue paper as a medium for securing the best results from indifferent negatives. Tissue envelopes of various density can readily be obtained in the workrooms. A few are kept handy, and many uses will be found for them by the progressive worker. For instance (as frequently happens in electric-lit studios), you may have a negative to print, and some of the figures farthest from the source of light are much thinner in printing quality. In this case all you have to do is to place a piece of tissue paper on the ground glass diffuser directly under the part in question. A small piece of paper, printed and developed, will show how well it evens up the lighting of the negative. Often a little piece used in the same manner will brighten up a shadow here or there, but a few simple tests will show its other numerous advantages.

Time-Saving in Handling Paper

The printer should also attend to his method of feeding the machine with paper. Much time is wasted fumbling with the lid of the box containing the stock. A good plan is to slit up a corner at each opposite end of one side of the lid of the box, so that when the latter is pushed up against the wall, with the newly-formed flap of the lid to the back, the lid may be rapidly raised like a hinged cover and will easily fall back into

place after extracting the strip of paper. At the same time, the box which receives the exposed strips should not be entirely closed down. The lid of this box should be kept on at such an angle that a narrow slit is left open, just sufficient to permit the strips to be inserted. In this manner no fog will result, as the insignificant amount of weak light that may filter through this very narrow slit cannot do any appreciable harm. All strips are, of course, inserted face down, and the box closed when printing is over, pending development. These minute details may appear trivial, but they all make for the comfort and speed of the worker.

Printing Room Retouching

I would also suggest that the printer be able to do a little spotting on the negatives that require it. Customers get good value for their money, and studios that specialize in postcard portraits are giving fairly large heads in "Rembrandt" and "sketch" busts. A lot of extra work consequently falls to the hands of the retoucher, who can easily do at least six "full lengths" during the time spent on a bust, if anything like justice is done. Taking this into consideration, it would surely be unjust, should the printer be handed some re-order or other negatives, which have become slightly damaged, to send them in to the retoucher. All that is necessary, then, is to have a fine spotting brush, say a No. 0 or No. 1 sable, and a little water-color-Payne's gray by preference—laid on a small strip of glass. This color, when diluted with water, works down to any shade of gray, particularly suitable to match all densities on any negative. There is no need to go to a retouching desk for this purpose, as excellent illumination is secured by laying the negative in its place for printing and switching on the white light. Some workers use red opaque for spotting, but this is absolutely inadvisable, as it prints far too white, and much extra work is needlessly given to the workers in the finishing department. The fact should also be borne in mind that the printer can run through in a few hours what may take the retoucher a whole day's work, and perhaps longer.

Developers

In developing prints, we have the choice of either amidol (known also as diamidophenol), or Monomet. Not that these two are by any means the only developing agents in use, but to my mind they outrival by far any of the other substitutes in practical use. Although I have had considerable experience with both, I personally prefer amidol. I find that it is cheaper, easier to make up, and gives a richer color than most other developers. With it the finest sepia tones can be secured. It must be admitted that some workers are prejudiced against amidol on account of its liability to stain the finger-nails to a dark brown, and that it loses its strength in a couple of days when in solution. It may be said, however, that the use of rubber gloves entirely removes the staining worry; further, that the majority of workers make up just sufficient for the day's work, in order to have fresh solution, no matter what developer is in use. Apart from

that, it may not be amiss to repeat here a hint which I gave readers of the "Journal" some years ago to prevent irritation and hardening of the skin of the fingers. Keep a jar of vaseline, or lanoline, at hand, and just before developing rub some well into the hands, more especially on the fingers and nails. Now, with an old towel or rag, rub well off again, and it will be found that quite sufficient will be retained in the pores of the skin to prevent the ill-effects of any developing agent. This expedient should be tried by those who object to the use of gloves.

Development Items

Whatever the developer in use, it is advisable to begin the batch with a well-diluted solution, so that there will be plenty of liquid. This allows the prints to move about freely, conduces to even control, and admits of the addition of more strong solution when the developer seems to be slowing down. Workers are often surprised to observe a number of the first strips coming up faster at one end than the other. This is caused by the strong developer and water not being thoroughly mixed in the dish, and is quite easily avoided by slightly raising and lowering one end of the dish a few times. Perhaps the greatest worry to the printer is the prevention of "air-bells," some papers being more susceptible to this nuisance than others. A good plan is to develop not more than four or six strips at a time, no matter how big a batch you may have on hand. When you are expert at developing these "clean," then twice that number may be tried, but you must not attempt to put them all in the dish at once, as by so doing you will assuredly court disaster. When the first six are seen to be coming up clean, other six may then be added, one at a time. As soon as the first six are fully developed they are thrown into the fixing-bath, and others are added to those in the developing dish to make up a total of twelve, and so on until the entire batch is finished.

A Hint as to Air-Bells

An excellent method of eliminating air-bells is as follows: While developing, bring up the strips one at a time from the bottom of the dish to the top. As soon as a strip is pulled up from the bottom with your right hand, immediately get hold of it with your left, so that the back of the strip is resting on the four fingers and the thumb on its face. Now draw the left hand rapidly away from the right, and the thumb will break up the air-bells as it slides along the face of the card. This treatment is given to all in succession.

One-Man Fixing of War-Time Papers

In these days of shorthandedness the worker gets no assistance, in many cases, from the apprentice in fixing prints. The printer is then obliged to attend to the fixing at the same time as developing, and this need not be a serious matter if carried out with proper care. In the first place, it is advisable to procure one of those small wooden spades, such as children get for playing with at the sands. It will be found very useful for moving the prints about in the hypo

bath, thus preventing the fingers from touching the hypo during the course of development. In pre-war days the strips were coated on a fairly stout base. These cards gave little trouble, as they gradually sank to the bottom of the dish, leaving ample room for the others to follow. Unfortunately, however, the shortage of raw materials in the paper-making industry has forced our manufacturers to coat our present supply on a comparatively thin base. Such thinly-coated strips require much greater care in fixing, as they have a tendency to float on the surface, and very few seem to fill the bath. Should other strips be thrown on top, they simply adhere lovingly together, and a harvest of imperfect fixing stains would assuredly result. The worker should contrive, then, to get the later developed strips underneath each other, which is quite easily done as follows: When the second strip is ready for fixing, give it a swish through running water to remove some of the developer, and by a cutting motion slip it under the first strip. Repeat this with the others until a bunch gathers near your end of the dish. These are gently pushed away with the spade, and you continue as before until the batch is completed. This simple manipulation ensures that all the prints get immediate and even saturation, and consequently the danger of uneven fixing is greatly minimized. process of fixing ought to be carried out with proper care and method. As soon as all prints are in the fixing bath they are gathered together to one side of the dish, and singly thrown over to the other side. They should all be face up now, so repeat until they are again face down, when you may spread them out and give your arms a rest for a few minutes. This procedure is again repeated from four to six times, according to the size of the batch.

The prints are then transferred to the washing bath. This latter operation should be carried out in a similar manner. Double the time should be allowed for washing, to eliminate the hypo efficiency. The fixing bath need not be made up every day. By adding about ½ ounce of metabisulphite of potassium per pound of hypo the bath will be kept quite clean for a week. All that is necessary is to add a pound or so (according to the size of the dish) of hypo every morning, to keep up the strength of the bath. During the hottest months of summer it is advisable to change the bath once or twice a week.

Method in Sepia Toning

In sepia toning a proper method of working considerably reduces failures. In the first place the printer should find out the orders to be toned. The negatives are often marked, and when known previously the strips should be marked with a pencil or kept aside, and development carried on rather darker than would be required for black and white prints, as all prints lose more or less in toning. In fact, if the emulsion is poor in silver this loss is considerable. The ideal print for toning should be accurately exposed and fully developed out. The favorite method for sepia toning is undoubtedly the sulphide process, which is advantageously used in practically every studio of repute, with exception only, perhaps, of the

larger trade printing concerns, where the hot hypo-alum method is favored. Much has been said about the sulphide method by experienced workers, but as yet I have not observed any practical means of obviating the risk of what is known as "yellowing of the whites." Some prominent workers have lately been advocating, or should I say resurrecting, the "bichromatesalt and hydrochloric acid bath," but, personally, I am sure that the bleach and sulphide process is best, as it certainly throws off less objectionable fumes and is so simple in working, while permanency is assured. My experience has shown me that the prints readily take and retain that yellow stain only when previously put through an alum bath. I do not see any gain in the use of this latter bath, except when prints require to be dried hurriedly, ferrotyped, or glazed, or perhaps in hot weather.

Dry-Mounting

Prints are frequently alumed previous to drymounting. This is not at all necessary. I have seen thousands of prints put through minus the alum bath. Care must be taken that the prints are thoroughly dry, and that the machine is at the proper temperature. In point of fact, I have observed cases where prints previously alumed showed distinct signs of surface markings, which caused them to be ultimately rejected. In any case, where prints, after bleaching and thorough washing, still persist in showing a trace of yellow, the following procedure should be adopted: Make a diluted bath of carbonate of soda, immerse for a few minutes, wash, and then proceed with sulphiding. This is very simple, and works well every time.

In conclusion, I may urge printers to exercise great discretion before passing prints to the hands of the finishers. It is quite true that materials cost much more than in pre-war days. The interest of your employer, however, must ever be borne in mind. A bad print from a good negative will not only spoil the chance of possible repeat orders, but will assuredly destroy what may be a means of introducing new customers. The normal, then, is to destroy all prints of questionable quality, whatever the cause, secure the negatives, and reprint at once if time allows, or with the next batch.—British Journal of Photography.

Transferring Positive Films to Concave Glass Surfaces and Coloring Them

Among the many profitable minor processes in photography there is one by which excellent results are obtainable by the transfer of a collodion film from paper to glass which when tinted or colored upon the back present a very charming effect. Transparencies may also be produced by the same means, and oftentimes a very profitable business may be created by the production of these colored pictures. A few years ago a process was in vogue under the name of the crystoleum process, where an albumen print was attached to a piece of glass, and made semitransparent by means of wax and Canada balsam. The process to be described differs considerably from the crystoleum process, because

the paper support is entirely removed, and the collodion film containing the printed and toned image alone is allowed to remain upon the glass, the coloring being done upon this film, and not upon the paper support, as in the crystoleum process. There are several good collodion surface printing-out-papers upon the market at the present time. The collodion printing paper that has proved very successful for this transfer work in my hands is Aristo Platino. A print of the subject required is made upon this paper, the printing being about two or three shades deeper than desired. It is then washed and toned in any good gold toning bath, such as the following:

Chloride	e of	gold	1.			3 gr.
Water		٠.				20 oz.
Bicarbo	nate	of	sod	a		10 gr.

After toning, the print is washed and fixed in a solution of hyposulphite of soda of the following strength:

Hyposul	phit	e o	f so	da		$1\frac{1}{2}$	oz.
Water						20	oz.

Ten minutes in this bath will fix the print, which must then be well washed and dried. If it is desired to tone the print in platinum as well as in gold, then the print may be made in the usual way, and printed much deeper than for gold toning alone.

The next operation is to paste the print upon the back with a soft and rather soluble paste, and mount it upon a piece of *thin* cardboard. As soon as the print is perfectly dry, it must be coated all over with a lacquer called "Albaline." Allow the excess of lacquer to run off at one corner and return it to the bottle. The print must be allowed to drain and dry. If coated in the evening, the lacquer-coated print will be perfectly dry the following morning. The following cement must also be made up, ready for use:

Gelatin					120 gr.
White st	igar				20 gr.
Water					5 oz.

The print, with its cardboard support, must now be allowed to soak in a tray of hot water. It is a good plan to let the print remain in cold water for about half an hour previous to its being placed into the hot water. In a few minutes the paste softens, and the paper print can be removed; the only object in mounting the print is to coat it evenly with the albaline. The soft paste may now be wiped off the prints and the concave glass support, having been well cleaned, is coated with the warm gelatin solution, and the print while still wet must be blotted and at once carefully pressed into the concave surface, so that no air-bubbles are visible. A few pieces of blotting-paper cut to the size of the concave surface can be used, or a pad and a weight placed thereon until the gelatin is nearly dry. pads are then removed, and the glass with the print attached allowed to become perfectly dry and hard. The glass is next immersed in hot water, and must be watched. In the course of

a few minutes the paper can be removed, leaving the collodion film upon the glass. It must now be carefully rinsed and stood aside to dry away from dust.

As soon as the film is dry, it should be coated over with a good matt varnish previous to coloring, the varnish supplying a tooth to receive the coloring. The following is a good varnish for this class of work:

Sulphuric ether			2 oz.
Gum sandarac			90 gr.
Gum mastic .			20 gr.
Benzole			1 oz.

Allow the gums to completely dissolve, and after standing for a day or two pour off the clear varnish into a clean bottle for use.

The coloring may be done either in oil or watercolor, oil colors being preferable. The colors are
applied with a brush to the matt varnished surface in tints, as required, the progress of the work
being readily seen from the front. The color is
allowed to dry, and the print is finally backed up
with a piece of white paper or thin cardboard.

These films can also be transferred to the center of a plate, or to opal glass, and whether colored or not pictures produced by the method described are effective and find ready sale. If the transferred film is to remain on the open glass or porcelain, then the matt varnish must be omitted, this varnish being used only when the film is to be colored. To prevent the transparency becoming injured by handling, it should be coated over with albaline, thinned down to a suitable consistency; the surface will then be perfectly protected against damp or other sources of injury.

Making Enlargements on Textile Fabrics

ONE of the branches of photography that is capable of yielding a profitable income and forming a permanent section of the business, is the making of enlargements upon various kinds of fabrics for the making of cushion-tops, screens and many other purposes. To print a photograph direct upon either silk, sateen or linen, can be readily done with either the salts of silver and iron, or by a prepared surface that has been sensitized and dried.

To make an enlargement a different method of procedure must be adopted. The surface of the article is made much more sensitive than in the printing-out process, and resort made to developing the image in a similar way to bromide paper enlargements. Not only can cushion-tops be made by the process about to be described, but much larger work can be produced of the character of tapestry, which can be worked in with colored yarn or allowed to remain as a production in monochrome. The fact that these productions can be washed with soap and water, and ironed in just the same way that any laun-dered articles can be, without fear of injury, should cause them to be brought very largely into use for many decorative purposes and realize prices that no kind of paper enlargement can command.

The utensils for carrying on the work need only be a few extra-large trays; one for salting the fabric; another to contain the nitrate of silver bath for sensitizing, one for developing, and a fourth for fixing the prints in. The washing after fixation can be carried out in a wooden wash-tub (a metal washing tub must never be

used).

The cushion-top, which may be of silk, sateen, or, if canvas is used, the latter is ordinary shirting, which must be washed well in clean hot water until all stiffening material has been washed out, then rinsed well in cold water and dried. Silk or sateen can be treated the same, using no alkali whatever. When the fabric is dry it will be ready for the salting bath, which is made up as follows:

Salting Solution

Bromide of ammonium		3 oz.
Iodide of ammonium		1 oz.
Bromide of cadmium		1 oz.
Distilled water		240 oz.

The canvas or linen is dipped into this and then drawn over a glass rod at the end of the tray, so as to drain off the excess of liquid which returns to the tray. The fabric is then hung up by shellacvarnished clips to dry, being stretched out as flat as possible during the drying. A number of pieces can be prepared in this manner and kept ready for use.

The next operation will be the sensitizing which is carried out in the following way: The solution must be made up and filtered. The tray in which this solution is used must be kept for the purpose of sensitizing only, care being needed in the use of this solution, and cleanliness, to

ensure success.

Sensitizing Bath

Nitrate of silver				5 oz.
Citric acid .				1 oz.
Distilled water		_	_	140 oz.

The salted material is dipped into this solution and allowed to remain for about two minutes, when it is removed and drawn over a glass rod or tube at the end of the tray, in just the same way as the previous salting. The sensitized sheet is now hung up for a short time in a dark room, when it will be ready for exposure. It must be understood that the sensitizing operation must be carried out under a non-actinic light, the material being in a very sensitive condition. In the course of a few minutes it will be ready for exposure.

This sensitized material can be exposed either wet or dry. It is in a much higher sensitive condition when wet than when dry. The enlarging is carried out in just the same manner as making a bromide enlargement upon paper, either by the use of an electric arc light with a suitable condenser, or by daylight without a

condenser.

The image is focussed upon a sliding screen; the board against which the damp sensitized canvas is fixed must be well coated with a protective varnish such as shellac, or a sheet of glass can be inserted and the edges of the board well varnished, the cloth being held in position by pins of hard silver wire. If the sensitized can-

vas is used dry, it can then be fixed in position with sharp-pointed awls, or a device for clipping can be resorted to. As soon as the canvas or cloth is in position the exposure is made. This will vary according to the intensity of the light, and may require from two to ten minutes. As soon as the exposure is complete, the canvas is removed and placed at once in a tray for development, the developer being poured rapidly over the surface in one wave. The developing solution is made up as follows:

Pyrogallic acid Citric acid			1 oz.
Citric acid .			1 oz.
Distilled water	_		60 oz.

Pyrol may be used in place of pyrogallic acid.

As soon as development is complete, which will occur in the course of from five to eight minutes, according to temperature, the canvas must be removed and plunged into a tub or tray of clean water, at the same time allowing no actinic light whatever to strike the enlargement. It must now be kneaded and washed in just the same way as washing a piece of linen, changing the water several times.

After this the print must be toned. Any of the usual gold-toning solutions can be used, such as are used for separate toning. When the toning is complete, another good washing will be required, after which the print must be fixed in a solution of hyposulphite of soda. The toning will change the color of the print considerably, and any red color that existed will disappear.

The hyposulphite of soda may be as strong as 25 or 30 on the hydrometer; about ten minutes' fixing will be required, the hyposulphite solution easily penetrating the fabric. As soon as the fixing is complete, the article must be thoroughly washed in a half-dozen changes of water or more, and it will be better if half an hour's washing in running water is given in addition. If the article is silk, the excess of water can be wrung out of it, and ironed from the back, the print either lying down upon a sheet of clean paper or resort may be had to the ironing board of the laundress.

may be had to the ironing board of the laundress.

The operation may appear to be somewhat tedious, but in practice it will not be found to

If the arc light is used for the purpose, more than one enlargement can be made at the same time. All that is necessary will be to fit up two or more suitable sets of rails and focussing screens or boards. The arc light should be fitted in an adjoining room or in a passage where it can be easily attended to, and as many condensers fitted around the lamp as may be required, each condenser having its own camera with lots of kits to take the various size negatives, and in this way no one set will interfere with the other, and the arc light can be made to do duty for two or three enlargements at the same time.

When an enlargement is made by this method a fairly defined outline of the image can be seen before development, and if the sensitized material has been dried previous to exposure a very decided outline of the image is visible.

Should the fabric be dried before exposure, it will be necessary to wet it in the nitrate of silver bath before development, allowing the

excess of solution to run back into the tray by drawing the fabric over a glass rod or tube in just the same way as when the sensitizing is done. In some instances these canvas enlargements will bear being permeated with wax and well ironed

with a hot flat-iron.

The developer will become discolored during a single operation and cannot be used twice over. This used developer should not be thrown away, but saved in a barrel, and the silver thrown down as a sulphide by adding some sulphide of potassium to the barrel when nearly full. Collect from time to time and send to the refiner with other waste.

Storing Plate and Film Negatives

Whether on glass plates or films, negatives must be stored in some reasonably careful manner or they will suffer damage. It is no uncommon thing to find glass plates stacked away in piles on shelves and films bundled pellmell into boxes. The most usual form of damage in such cases is that the film gets scratched, and there is the added disadvantage that any negative required can be found only by blindly hunting for it, which involves much unnecessary handling of the negatives.

A fairly good method of keeping negatives is to pack them away in the original plate boxes, which will comfortably accommodate more negatives than plates. If the boxes are labelled with a number, or contents title, on the side or end, it is easy to identify any particular box when they are stacked up. Films may also be put away in plate boxes, and it is advisable to put on the top of each batch a clean negative glass to keep them flat and prevent their springing

out when the lid is removed.

Grooved boxes in wood and metal are specially made for negative storing, but they have the disadvantage of being bulky in comparison with the number of plates they hold, and, on the whole, the best storage system for plates is provided by boxes or drawers to hold the negatives, with a separate envelope for each plate. These envelopes are consecutively numbered, and have spaces for filling in title, date, details of exposure, and other information, while an index card to each batch shows the number and title of every negative as a convenient means of finding particular ones rapidly and easily. These boxes are specially useful for keeping sets of negatives. Each box should have a distinguishing letter upon it, and every envelope should be marked with a corresponding letter to facilitate the return of the negatives to their proper boxes when they have been drawn from several sources.

Similar boxes are designed to take films, each film being enclosed in a separate paper wallet, furnished with similar printed details to those on the plate envelopes. A hundred film negatives can thus be conveniently and safely stored in quite a small space. With both plates and films each envelope will hold two if required, and this is convenient in the case of duplicate or very similar negatives, or for storing a sky negative with the subject for which it is used.

It is a good plan to add to the other particulars

on the envelope any ascertained details of exposure. Many photographers make a practice of taking a proof print of each negative before storing it: and if those proofs are made on a standard basis as regards light and paper, the exposures noted will give the comparative exposures for all the negatives. This provides a piece of valuable information as a basis for working out exposure on any other brand of paper, for contact work or for enlargement to any scale, or for lantern slide making. The proof itself may be slipped into the envelope with its negative. Either on the proof or on a rough diagram on the envelope may be usefully indicated any special treatment suggested for giving more or less exposure to certain parts. To take an imaginary case, a corner of the subject might be pencilled off and marked -5, the foreground as shown bounded by another line marked +15, while the remainder of the subject was marked 30. This would denote that for making a contact print on the usual paper and with the standard lighting the general exposure required is thirty seconds; but that the marked corner should be shaded for five seconds of the time, and that the foreground is to receive an extra fifteen seconds. With any other form of exposure, as, for instance, in the case of making an enlargement, the proportions would remain the same, although the actual times

might differ.

When the negatives are properly stored some system of indexing is necessary, and complete and effective indexing is often far from easy. A good deal of cross-reference will be inevitable. One box may contain a set of negatives of a particular locality, and these will quite properly be kept together and indexed consecutively. But among them may be subjects that would otherwise be appropriately stored elsewheresay with architecture, figures, general landscape, sunsets and so on. In all these cases the box and envelope number should be noted on the index cards of all the other boxes concerned. For example, if box A is reserved for architectural subjects only, its index should show such an addendum as, "See also B, 35; C, 19 and 41; D, 6, 9, and 22," and so on. When a negative requires an added sky the cloud plate may be included with it if it is appropriated to that one alone, as already suggested; otherwise the envelope of the cloudless subject should be marked with the negative numbers of appropriate

kies

There is another method of indexing which has certain advantages, but it is somewhat cumbersome and expensive. All the stored negatives are simply numbered consecutively, and an album is kept with correspondingly numbered prints of all the subjects.

These hints on storing and indexing negatives are intended as suggestions for the general photographer and the amateur. They do not apply to the professional portrait photographer, whose subjects are naturally restricted in character, and who has a method of his own to facilitate easy reference to any negative whenever made. But in all ordinary cases a good system of storage preserves and protects the negatives, while adequate indexing is a great convenience and time-saver.—Photography.

The Repair of Apparatus

Various little repairs, such as a repaired leaky dark slide by seccotining washleather round the rebate, are usually necessary at periodic intervals. Slides will develop light-leaks as will also cameras, while dead black wears off and screens become loose in course of time. Referring more particularly to this special trouble, we may point out that a double dark slide that is well made in the first instance should not develop leaks around the edges as the result of fair usage. If properly designed the two halves will so fit into each other that even a considerable shrinkage of the material will not let in light. If, however, from any cause this trouble does occur, the first thing to look to is the hinge or hinges; the effects of the shrinkage can often be remedied by taking off the hinges and refixing them after plugging the old holes with wood plugs glued in. The alternative method of lining the rebates should only be resorted to when the re-setting of the hinges and catches will not remedy matters, and then care must be taken not to use too thick or too stiff a material; otherwise the hinges will be badly strained and perhaps broken. Washleather was used, which is excellent if of the right thickness, but too often this material varies in thickness, being much thicker in some parts than others, and then it is not very suitable. An excellent material for this and similar purposes is suède leather. A fine surfaced thin cloth is also very often useful, while even blotting paper is not to be despised. In fact, this last material is very useful, as it can be obtained in various thicknesses, is very well adapted to the purpose, and lasts well if not handled too roughly.

The most usual place for a light-leak is, however, at the light-trap where the shutter draws in and out, and as this trap nearly always depends on a strip of velvet or plush that in time becomes worn down, a repair at this part is more often necessary. Moreover, similar light-traps exist in other parts of photographic apparatus, and so repairs of this type are often required. Sometimes cloth takes the place of velvet or plush, while very varied thicknesses of material are required to make equally good fits everywhere, and therefore it is advisable to collect odd bits of velvet, cloth or plush, and keep them handy for repair purposes. Various thicknesses are best provided for by mounting the material upon paper or card of varying substance; when so mounted it is easy to cut off strips as required. Beginners generally spoil the material at their first attempt by allowing the adhesive to penetrate through to the surface and destroy the pile. If velvet is glued directly into the place prepared for it, usually a groove in the wood, it requires considerable care to avoid getting glue on the surface; the use of mounted material renders the task much easier. The paper or card should first be coated with seccotine or glue, and then the layer of adhesive smoothed over with a straight edge. The material is then rubbed lightly down and the whole allowed to dry under slight pressure. The grooves for the light-stopping material should be carefully prepared. The old velvet can be torn out, and remaining fragments, together with the old glue, scraped away. Care

must be taken not to cut into the wood and spoil the groove; hence it is best to use a scraping tool, and not a sharp-edged cutting one, such as a chisel. The re-velveting of light-traps is a perfectly easy operation and a very necessary one that every photographer should be able to do for himself. It should not be forgotten that while velvet forms a good light-trap it is also an excellent dust trap; therefore, whenever it can be got at readily, it should be subjected to a careful regular brushing. A soft-haired tooth-brush is good for the purpose. The brushing not only removes dust, but raises the pile, which is apt to be burnished down by the friction of the parts which slide over it.

Pinholes in bellows are troublesome defects, and the only effective way of dealing with them is to patch them from the inside with a piece of opaque black cloth. They can be prevented from appearing by keeping the leather in pliable condition. To do this a good dressing should be occasionally applied, while the camera when not in actual use should be kept carefully in some place which is not liable to extreme changes of temperature. Further, it is not advisable to fold a camera tightly up and put it away for a long period. It is better to leave it just slightly extended, but well wrapped up in a focussing cloth. Tight folding is very apt to cause the corners of the folds of the bellows to wear out, and these are most awkward places to repair.

When overhauling apparatus all screws and brasswork should naturally be looked to. Loose screws in woodwork should be replaced by those a gauge fatter if possible, but if this cannot be done the old hole should be plugged and a new one made through the plug. If very loose a wood plug should be glued in; if only slightly loose a cork one will often do all that is required.

Dead black is invariably required at regular intervals, even though the majority of photographers neglect this very simple matter. In nine cases out of ten it will be found that a careful re-blacking of worn places will result in the production of cleaner negatives, for reflected light plays a large part in fogging or veiling the image. An innocuous black containing no turpentine should be used; the popular one of lamp-black mixed with dilute celluloid varnish is as good as

any. Shutters also go wrong, but most of these are far too delicate things for the photographer to try experiments upon. A roller-blind shutter is simple, and it is perfectly easy to fit it with a new blind, which is the repair most usually required; but focal-plane shutters and lens-shutters generally require experience and skill, and should be put into the hands of experts if anything goes wrong.—British Journal of Photography.

Non-swelling Developers, Fixing-hardening Baths and While-You-Wait Portraiture

WHILE there are degrees of "while-you-waitness" in the portrait business, it is generally necessary to pass negatives through in, say, ten or fifteen minutes. In some places this may be for the purpose of delivering prints to the customer within about half an hour; but in most, we

should judge, it is simply part of the system, according to which large batches of negatives are handled without loss of time and with a margin of speed in the way of providing for unfavorable conditions, such as extra demands upon output, longer exposure of negatives in printing and enlarging, etc. While in some studios negatives are dried by artificial heat, in

others they are enlarged wet.

In the first place, one outcome of the experiments is that, in order for a wet negative to be able to withstand a considerable degree of heat, it is not simply sufficient that the film should be hardened after development. In addition, the gelatin of the emulsion coating, by choice of a suitable developer, should be prevented from swelling as far as possible. Where, as in the tropics, the temperature of the developer may be anything from 75° to 100° F., special means require to be taken to frustrate this swelling. No doubt in the case of ordinary temperatures of from 60° to 70° F., the swelling of the gelatin is also a factor, and therefore the same means, but doubtless to a modified degree, may be adopted with advantage. As a preventive of swelling of the gelatin in high-temperature development, it is found that a most efficacious means exists in the addition of ordinary sulphate of soda to the developer to the extent of 10 per cent.—that is to say, so that every ounce of the working developer contains about 45 grains of this salt. This is a working expedient which can readily be employed, since sulphate of soda is a very cheap and soluble substance. A stock solution of 25 per cent. strength (5 ounces dissolved in water, and the bulk made up to 20 ounces) is readily prepared, and may be used for the introduction of the 10 per cent or a lesser proportion into almost any of the developers ordinarily used. For example, in the case of a single-solution formula, the stock solution of which is mixed with an equal bulk of water to form the working developer, it is necessary simply in mixing 20 ounces of developer to employ 2 ounces of water and 8 ounces of the stock sulphate solution for dilution. In the case of developers which are more largely mixed with water precisely the same rule can be followed, substituting for 8 ounces of the diluting water (for 20 ounces of developer) 8 ounces of the sulphate stock. If the developer is used "neat, it is, of course, necessary to incorporate the sulphate when dissolving the chemicals, using 2 ounces for every 20 ounces of single-solution developer; if the formula is of the two-solution type, mixed in equal parts to form the working developer, it is, of course, necessary to dissolve 2 ounces of sulphate in every 20 ounces of each solution. We have assumed, in quoting these figures, that it will be advisable to use the sulphate in the full 10 per cent. strength and the formulæ as they stand can be taken by the photographic worker in tropical climates, whether in the studio or field. At home the restriction of swelling of the gelatin film will no doubt be quite sufficiently met by addition of sulphate to half or even quarter strength, in which cases it is only necessary to take one-half or one-quarter the volume of sulphate stock solution in making up developers according to the rules just given. The addition of sulphate is effective with all ordinary developers, but those compounded with caustic potash or caustic soda as the alkali are to be avoided, on the ground of the very strong action of caustic alkalis upon gelatin. Mr. Crabtree, as the result of comparing a large number of developing formulæ, has recommended one which is largely free from swelling action on gelatin (owing to the considerable proportion of sulphite) and also is particularly fitted for use at a high temperature, owing to the substitution of sodium carbonate for a caustic alkali in conjunction with paramidophenol. The formula for this developer is:

Paramid	60 gr.					
Soda sul						1 oz.
Soda car	bor	ıate				1 oz.
Water						20 oz.

The sulphite and carbonate in this formula, as in the others for fixing baths which follow, are the dry or anhydrous forms of these chemicals

as now very generally sold.

It remains to be seen whether for ordinary while-you-wait work there is any positive gain in making use of a developer such as the above or one rendered non-swelling by addition of sulphate. The Eastman experiments indicate that where the temperature of development is high, such a developer is necessary, and thus, while it may be dispensed with in ordinary practice in this country in winter, in hotter climates and here in hot summer weather it provides the means of regularizing the work of an establishment where negatives are dried off quickly or enlarged wet in conjunction with the fixing-hardening baths now to be mentioned. Two formulæ for these have been worked out in the Eastman Laboratory. The first and most active is one in which formaline is used in the hypo bath. The second is one compounded of hypo, sulphite, chrome alum and acetic acid, the last-named in a very much smaller proportion that is usually employed in acid fixing-hardening baths. The incorporation of formaline with the hypo is obviously a time-saving plan, and therefore, preferable to the use of a formaline bath before development or between development and fixing. And the action of the formaline is found to be no less efficacious, while the bath has reasonably good keeping qualities, being free from tendency to deposit sulphur within a week of making even at a temperature above 100° F. This bath is:

Нуро		5 oz.	2½ lb.
Soda sulphite		1 oz.	1/2 lb.
Formalin .		$2\frac{1}{2}$ oz.	20 oz.
Water		20.02	1 gal.

The formalin is the commercial liquid sold under this name, and containing nominally 40 per cent. of formaldehyde; the sulphite is the anhydrous, or dry.

In making up the alternative bath it is necessary to observe the order of mixing which applies to any bath of this kind. First, the formula:

Acetic a Soda su Chrome	lph	ite	·	22 min. 350 gr.	$6\frac{1}{2}$ oz.
tash)				700 gr.	13 oz.
Hypo Water				4 oz.	2 lb.
Water				20 oz.	1 gal.

In making up this bath the proper course is to divide the water into four different lots, dissolving each of the constituents separately. in the case of the gallon formula, the acetic acid is mixed with about 5 ounces of water, and the sulphite dissolved in about 15 ounces. These two are then mixed, and addition then made of the chrome alum, previously dissolved in about 80 ounces of water. The hypo is likewise dissolved in about 60 ounces, and the acid-sulphite-alum mixture added to it. For the sake of quick solution and avoidance of undissolved particles, it is just as well to use hot water for the three solid chemicals, mixing the separate solutions when reasonably cool. As in the case of the formalin fixing-hardening bath, this, with chrome alum, was found to retain its hardening properties for a week even at a high temperature and even when contaminated with developer to the extent of 2 per cent.

As to which bath is the more suitable for the fixation of negatives which are to be quickly dried by heat or placed wet in the warmth of an enlarging lantern, probably in this country the balance of advantage lies with the chrome alum formula. It is probably quite sufficient in its hardening effect upon gelatin negatives, and is free from the penetrating odor which is bound to attach to any bath containing a considerable proportion of formalin. Moreover, either bath may be employed for prints which have to be quickly dried off, although the specially hardened character of most gaslight papers and many bromides has rendered the problem of rapid drying of less concern than that of negatives.—

British Journal of Photography.

Tompondum

Temperature

Is your printing room the same temperature as the rest of the studio and do you keep a

thermometer in the developer?

Plates and film are not the only materials that suffer from low temperatures. Prints will not develop to their full quality in a cold developer.

It seems to be the natural inclination of the photographer who makes his own negatives, to use greater care in producing a perfect negative than in producing a perfect print.

Making a perfect print from a perfect negative is far from being an automatic operation. There are just as many factors that enter into the reproduction of a good negative as the reproduction of a good lighting. And the temperature of the developer is not the least of these.

The correct temperature for a paper developer is 70° F. and it is important that this temperature be maintained during development. If the temperature is taken as the developer is mixed in a graduate, the solution poured into a cold tray and the operation performed in a cold work room, the solution will soon be quite cold and prints will not be fully developed—in fact, the print can never be properly developed in a cold developer.

With the developer at the correct temperature the properly exposed print comes up gradually to the point where development pauses. The print seems dark enough but lacks brilliancy. From this point on it builds up in quality, though the change is not readily noticed unless a comparison is made with a partially developed print. Develop at the right temperature for this quality.

If the developer is cold the image comes up slowly, and if your printer does not recognize the cause of the trouble, he is very likely to think he has underexposed his print. More exposure, however, will not correct the fault and results are certain to be poor. Insist on a thermometer being kept in the developing tray continually.

These precautions are equally important in developing Bromide enlargements. Development of a Bromide print should never be less than a minute and a quarter with the developer at a temperature of 70° F. Prints that develop in less than this time indicate overexposure and the resulting enlargement will lack contrast and brilliancy. If the image does not begin to appear after five seconds' development, one of two things may be wrong. The developer is too cold or the print is underexposed. Be sure the temperature is right and there can only be one thing wrong.

one thing wrong.

One often hears the remark, "I wish I could make enlargements like so and so." It's easy if your printer uses ordinary precautions, mixes his developer properly, uses it at the proper strength and temperature, exposes his prints so they will stand full development and gives

them full development.

When you are sure the temperature of the developer is right (and insist on full development), you can be sure the prints will be right. It is poor economy to save the overexposed print by giving it less than full development.—
Photo-Digest.

Diffused Light in Portraiture

It is often found that an operator, who does good work under daylight illumination, fails when he employs the electric light for the same purpose. The illuminant is blamed, but it is himself that is responsible for the misuse of a good agent. Take, for an example, a concencentrated light (a single enclosed arc lamp): if this is used without screening the light, the shadows are clearly cut and well defined, but if tracing paper is employed for the purpose of diffusing the light and placed near the lamp, the shadows still remain decided, but the outlines are considerably softened. If a head screen is interposed covered with translucent muslin, we get soft shadows and indefinite outlines, while we are able to develop shadow detail without losing the good modeling.

It should be noticed that the nearer the head screen is brought to the model, the greater is the intensity of the high-lights reduced. In fact, it is possible to equalize the lighting on both sides of the face, if so desired. It must not be forgotten that the reflector must receive light before it is able to reflect that light, so that the diffuser must not be placed so that it prevents light reach-

ing the reflector.

Another method available for securing soft illumination with an arc lamp is to place a white

screen behind the light and then cut off all direct light by means of a saucer-shaped enamel reflector, so placed as to cover the arc. One important factor in lighting is that of distance. Even with reflected light alone, it is possible to obtain cast shadows and the remedy is either to place the model further from the light or interpose a diffuser.—British Journal of Photography.

Convertible Lenses

When purchasing a lens the first consideration is, of course, its suitability for the particular work in view, a view which must take pre-cedence of all others. The next point to be considered is its adaptability to other classes of work, as later on this may save the expense of another instrument. For example, the selection of a group lens with sufficiently large aperture will save the expense of a portrait objective of the same focal length, while a rapid lens for small work may answer admirably for wideangle views on larger plates. In like manner, when a rapid lens of medium size is to be selected it is as well to consider the claims of the convertible type, which permits of the use of the single components when a larger image is required on a given size of plate or a larger plate has to be covered. Some caution is necessary when choosing a "convertible" anastigmat, as many so described will not give a sharp image except at a very small aperture, while others give critical definition at the full opening. As a rule, one at least of the components has a focal length twice that of the complete lens, so that when using it the f numbers are doubled, f/6 becoming f/12 and f/8 becoming f/16. The modern single lens is usually very different in its performance from the older types or from the single components of a rapid rectilinear, as not only is there practically no distortion but the spherical correction is excellent. The safest course is always to obtain a lens on trial before purchasing, and to test carefully the complete lens and the single components. There will then be no uncertainty as to the practical value of the instrument.—British Journal of Photography.

How to Work with Color Sensitive Plates

There is a marked contrast between the color sensitive plates which were in use twelve or more years ago and those which are now available. Before 1906 there were so-called Panchromatic plates, and while they served many useful purposes, they were greatly inferior to the type of plate produced by "bathing" with the isocyanin dyes which were introduced about that date. With these older panchromatic plates exposures in three-color work were very long through the red filter, the ratios of the three exposures being about 1 to 5 to 50, although in some cases the red exposure became as much as 200 times that through the blue filter. Modern conditions present a great contrast to this, for the three exposures become nearly equal. In fact, when "half-watt" lamps are employed for illuminating the original the ratios are reversed, that through the red filter becoming the shortest.

The photography of furniture for commercial

purposes is a field of work which modern panchromatic plates have created, for it is now possible to obtain photographs with short exposures in which the grain of the wood is somewhat enhanced, and such photographs have played a very large part in the export furniture trade. The photography of colored objects generally has received a great impetus, and, lastly, the fact that red sensitive plates enable photographs to be made through considerable thickness of air has played an important part in the successful prosecution of the war.

The actual mode of procedure with color-sensitive plates differs but little from that with ordinary photographic plates. A suitable color filter has in almost all cases to be employed, and as these plates are sensitive to the whole of the light which the eye can see, they are usually handled in complete darkness. Safe lights have been made available by some of the plate makers, but they give so little illumination that many workers, including myself, do not trouble to use them. This procedure, however, necessitates correct exposure and development under standard condition. In the process studio, where illumination is constant, there is no difficulty as regards the time of exposure, and the length of development may be determined by the temperature of the developer and the type of negative required. When daylight is used it is then desirable to employ some form of actinometer.

Good as these plates are, they still remain more sensitive to the blue than to any other color, and therefore in orthochromatic work it is necessary to screen down the amount of blue in order that the green and red may become operative, and to do this one employs the usual yellow filter. It is an extremely difficult thing to obtain a photograph which accurately renders the light and shade of any subject, whatever its color. For most ordinary purposes, however, it is quite sufficient so to screen down the amount of blue that the reds photograph up about as well as do the blues. If one adjusts the yellow filter to any of these plates, so that an effect of that kind is obtained, then in nearly every case the greens photograph a little too dark, and if it were necessary so to adjust the filter as to get really correct rendering, one would have not merely to grade down the amount of blue light that was photographed, but also to grade down the red light to some extent. To do this a small amount of blue-green dye would be introduced to the composition of the filter. I think that nothing has given photographers greater satisfaction than the fact that the dyes which are used in work of this kind, both for sensitizing the plate and also for making the color filters, are now made in this country.

I have made a few tests recently with one of the dyes used for making orthochromatic filters —Filter Yellow A—and I have ascertained how much of this particular dye is necessary to go into the filter so to grade down the blue light that one obtains a fairly correct rendering of colored objects, with that one proviso with regard to the green. I ascertained that for daylight one wanted 1 mg. of the dye per 1 sq. cm. of the area of the color filter. That corrects the panchromatic plate for daylight. For a

much yellower light with which we sometimes work, namely, the half-watt lamp, one does not want so much of the yellow dye, and the amount required there is 0.2 mg. per 1 sq. cm. For the enclosed arc lamps, which go to the other extreme, one requires 2 mgs.

The filters may be made in this manner: A piece of glass with a good surface is taken, cleaned thoroughly, and the area measured, and then this is carefully levelled up and coated with a suitable quantity of gelatin containing the right amount of dye, so that when the filter is finished each sq. cm. of its area will contain the appropriate amount of the yellow dye. One requires a soft gelatin, and 20 c.c. of the dyed gelatin solution may be coated on 100 sq. cm. of the plate. The drying should be under uniform conditions. That is necessary in order that a perfectly even film should be obtained, and then, provided that the glass has been thoroughly cleaned, the film can be lifted from the glass after cutting through the marginal por-tions with a sharp knife. In order to preserve the film it is usual to cement it between two pieces of glass of good optical quality with thin Canada balsam.

The glass snound not be too readily. It glass is apt to be distorted too readily. It The glass should not be too thin, for thin should be fairly stout, and it must be flat. quality of the glass one uses depends on the perfection of the work which is required, and for very accurate work, especially with three-color work in large sizes, it is necessary to have glass of very high optical perfection. such work one must leave the question of the glass to people who can handle delicate optical matters. Most of us are familiar with the very thick but very perfect filters which have been supplied by Hilger's in this connection, but for many purposes, especially with short focallength cameras, one may do excellent work with patent plate glass, provided that it is carefully selected. One takes a sheet of glass and looks at some object by reflection in the glass—the horizontal bar of a distant window serves quite

well for the purpose.

Two images of the window are seen. As the glass is moved, or as one moves the eye to receive the light first from one end of the plate and then from the other end of the plate, the two images should either keep about the same distance apart right across or should move steadily together or away from each other. If the glass is very unstable, the two images may even cross each other. This is a very simple test, but it gives one some idea as to the quality of a piece of glass, and it is possible to select by this method glass that will make very good The glass having been selected and cut to a suitable size, the colored gelatin film is cemented between the two pieces with Canada balsam, for which chloroform forms a good thinning medium.—A. J. Bull, in Photographic Journal.

The Right Tools

THE writer called upon a photographer recently and found him quite busy making a number of copies. He wasn't at all enthused over the work and frankly remarked that he was only doing it because he felt he had to do it.

That's a bad way to look at any part of the business that furnishes you your bread and butter, and as I don't mind such work at all, I inquired just why the work was objectionable.

The man wasn't using the right tools, that was all. He had photographed a flat print on a portrait plate and the result was flat. intensified his negative and still it was not satisfactory; and he was thinking of making a positive, intensifying that and making still another negative, when all he needed in the beginning was a process plate.

A man who doesn't make use of all the photographic tools that are at his command is very much like a carpenter who tries to do cabinet work with a hammer and saw and

expects to get good results.

Of the special plates designed to give superior results in certain classes of work none are more generally useful than the slow or process plate. They give great density and have great latitude

in exposure.

For reproducing line work, printed matter, etc., the process plate is the only one that will give satisfactory results, notwithstanding the belief of many that an ordinary plate can be used by merely intensifying. Density is the thing desired in such work, and it is readily secured in the process negative without troublesome after-treatment.

If you have a weak negative to reproduce, one that is lacking in contrast, a brilliant result is secured if a process plate is used both for the

positive and the second negative.

Copying seems to be the work there is the greatest objection to making, however, and it is a line of work in which there is a good profit, and the certainty that if it is done well it will bring the good-will of the patron, and good-will is the big asset in any business.

A copy can certainly be made as good as the original, and if the print is weak and flat the copy on a process plate will be better than the original. If you have a stained print to copy, the chance of making an improvement is even greater, for you can use a Wratten Process Panchromatic and a color filter slightly darker than the stain on the print, and so produce a copy that is far better than the original.

It is worth any photographer's time and study to make himself proficient in copying. You are certain to please if the copy is a good reproduction of the original, and a good piece of work often makes your customer a permanent

one.-Photo Digest.

Strip Printing

The method of printing bromides in strips either "three on" or "six on" is, to judge by our ever-increasing sales, becoming more popular than ever both for postcards and larger work. This month we propose to offer a friendly criticism of some of the methods of working that have come under our observation.

The chief trouble seems to be in getting all the images the same depth, and we think that in most cases it is not the assistant who is to

blame, but the method. The exposing light may be so powerful that the exposure necessary is only a fraction of a second, and it becomes an easy matter to make a 50 per cent. or even a 100 per cent. error. The light should be screened down or a lower candle-power light used, so that at least two or three seconds' exposure is required; the extra time so occupied would be saved by the absence of "repeats," and better all-round work would result. In counting seconds it is better to count quickly—one-two-three-four, one; one-two-three-four, two; and so on. A loud-ticking clock will serve as an accurate guide.

Another defect often met with is the incorrect placing of a vignetted head on postcard strips, with the result that upon trimming the head is on one side of the card. To prevent this, it is a good plan to get a waste postcard, exactly $5\frac{1}{2} \times 3\frac{1}{2}$, and cut out an oval opening about $3\frac{1}{2} \times 2\frac{1}{4}$ in the center, or a little higher. When adjusting the negative in the carrier the cut-out postcard is placed on it, taking care to see that the card is on the correct first "feed" mark.

Another trouble is "air-bells" in development or fixing. The chances of fetting these in development can be reduced to a minimum by placing the strips in the developer in pairs, back to back. We have seen many skilful assistants work this way, using the right hand to pair them and the left hand to place them in the developer and turn them over. Up to a dozen pairs can be handled in this way, taking care to keep them in the order in which they go into the developer, and to use plenty of solution. With the finger and thumb it is an easy matter to pick out the bottom pair, place it at the top, and so on, removing the pairs one by one as they become fully developed. When thrown in the fixing bath an assistant should at once part the pairs and fully immerse them, afterward keeping them on the move. It is true that perfect fixation is more important than thorough washing, and it is equally true that the first minute of a print's immersion in the fixing bath is the most important, and the fixing solution should have free access to both back and front of the print.-RAJAR, Trade News.

Stained Negatives

Few workers realize what an important part the actual color of the negative has in the amount of exposure required when bromide printing or enlarging. An instance of this came under our notice recently. A photographer, who always employs one of the modern single-solution, highly-concentrated, non-staining developers, had to make a set of prints from a number of negatives made some years ago by a former operator and developed with pyro soda. Of course, these negatives were slightly stained. This the worker observed, but as the result of long practice he mentally gauged the density of the negative by his own, allowing a little extra, as he thought, when exposing for the stained films. A large batch of paper was exposed, and when he came to develop he found to his surprise that the whole was grossly underexposed, so much so in fact that some of the

prints showed but a ghost of an image. experience has taught that operator one thingthat it is impossible to guess the amount that a pyro stain may add to the density of a negative. In the present case it was subsequently found that, though the negatives were alike in density to those produced with the modern non-staining developer, actually when printing upon a certain development paper twice as much exposure was required, and even then the prints differed in character, being much the harsher. In such cases the only way to be certain is to make a careful trial. Many photographers still cling firmly to the older pyro-soda formulæ, and when reminded of the stained image that it gives assert that that stain gives a printing quality to the negative wholly absent from the productions of the modern developer. Certainly, when bromide-printing, we have found that pyro-stained negatives take far longer than the others from which this "quality" is absent, so that for time-saving the modern developer scores.—British Journal of Photography.

Easy Conversion of Metric Formulæ

ALTHOUGH the metric system of weights and measures has many advocates in the world of photography, it cannot be said that the average photographer or his assistant takes kindly to it, and many no doubt feel a little annoyed when a formula is given in grams and cubic centimeters with no accompanying equivalents, or at any rate quantities, in the more familiar English system of grains and ounces.

system of grains and ounces.
Several methods of conversion have been advocated, and all may be simple enough to expect mathematicians or those assistants who have time to get used to them, but the simplest plan, and one needing but little skill in arithmetic, is the following, when, as is usually the case, the constituents of a formula are given as so many grams per liter (1000 c.c.).

The plan is to reckon the 1000 c.c. as 16 ounces and multiply all the gram quantities by 7, which plan will give the number of grains per 16 ounces of solution, there being no real reason why the 1000 c.c. should be reckoned as a pint of 20 ounces, as many appear to imagine, for as a matter of fact a liter is 35 ounces and 94 minims.

As an illustration of this "rule of seven" plan the one-solution scalol-hydroquinone developer may be taken:

Water	1000 c.c.	16 oz.
Soda sulphite crys-		
tals	$50 \text{ gm.} \times 7 =$	350 gr.
Scalol	$2.5 \text{gm.} \times 7 =$	
Hydroquinone	$4.5 \text{gm.} \times 7 =$	31½ gr.
Soda carbonate crys-	-	
tals	$75 \text{gm.} \times 7 =$	525 gr.
Pot. bromide	$0.5 \text{gm.} \times 7 =$	$3\frac{1}{2}$ gr.

Sixteen, eight or four ounces are quite as convenient as the more popular twenty-, tenand five-ounce quantities. If, however, the worker prefers the 20-ounce lots to the 16-ounce given by the above system, the multiplying by seven can still be carried out, and when the

figures are obtained they are simply divided by four, which gives, of course, the 4-ounce quantities, they being then multiplied by 5 to produce the quantities per Imperial pint.— British Journal of Photography.

A One-solution Intensifier

THE Monthly Trade Notes issued by Rajar, Ltd., are becoming quite a feature, and those for the current month contain the following particulars concerning an extremely useful one-

solution intensifier:

"The mercuric-iodide one-solution intensifier should find a place on every busy photographer's shelf. It will readily give considerably increased contrast to a thin negative, is particularly safe to use, and its advantages are:

1. A ready-at-hand solution that keeps well,

and can be used over and over again.

2. If the negative contains traces of hypo no harm will be done.

3. Can be used locally to intensify parts of a

negative.

 Intensification can be removed if desired by simply placing the negative in the fixing bath.

5. Local reduction is easy. Parts of the intensified image can be painted over with a brush charged with hypo solution.

6. It is reasonably permanent, and cannot give

stains.
7. Can be used to give 'sparkle' to lantern slides.

To make up the solution, take say 100 grains of mercuric chloride, crush and place in a small linen bag. Suspend this in a 20-ounce widemouth bottle near the neck, and fill the bottle with hot water. When dissolved (it will take some time), take out the bag and burn it. Now add a few crystals of potassium iodide gradually, shaking the bottle all the time. The solution assumes an opaque salmon color, and the iodide must continue to be added cautiously until the solution becomes fairly clear and transparent, but with still a trace of red color left. Add no more iodide, but drop in a small crystal of hypo about the size of a pea and the intensifier is ready for use.

The negative, after the usual fixing and washing, is immersed in this bath for a few minutes, washed and dried. To ensure permanence the negative can, after being intensified and washed, be placed in any developer for a few minutes, washed and dried, but for ordinary work this is not absolutely necessary. The negative may become yellow in time, but this does not affect its printing quality, and it is possible to almost discharge this color without altering the contrast by placing the plate in a very weak solution

of hypo.

Commercial photographers will find it useful for strengthening parts of interior negatives, while a negative of a group or a full-length portrait taken by electric or flashlight can have the weak foreground improved by using the intensifier in a tilted dish.

Drawing Board, T- and Set-square

I WONDER how many of my fellow assistants have had occasion to discover the usefulness of these stock tools of the draughtsman for purposes such as are constantly cropping up in a photographic workroom! When going to my first job I took with me a drawing board, T-square, and set-square, which I had of my own from classes in engineering drawing. was well laughed at when I was seen bringing them in on the second morning. But since then my fellow-workers in the printing and mounting-room have had good cause to alter their opinion. It is surprising how many small odd jobs I seem constantly to be doing for them. If it is a bit of mounting-board that wants cutting up perfectly square they come to me asking to have it marked out in pencil for the trimming knife, and so to get a perfectly square cut; or it may be prints of odd size which require to be trimmed down. Very often you cannot depend on the guide of a desk trimmer being perfectly at right angles to the cutting edge of the knife. So you first rule out in pencil on the prints with T-square and set-square the part which is to be the trimmed picture, and then it is a very easy matter to set it in the trimming desk so that the knife cuts exactly along it. In fact, I don't know how I should get on for a lot of these small jobs without my draughtsman's equipment. It comes in useful in cutting masks, for quickly plotting out positions for several prints in a single mount and for all kinds of similar work where a little (very rapid) exact measurement will accomplish things better than leaving everything to be judged by the eye. I venture to say that it would be a good investment in every printing and mounting room to have a good-sized drawing-board, T-square and set-square hanging somewhere on the wall, if a place cannot be found for them on a bench, always ready for use.—T. F. TARRANT, in British Journal of Photography.

Mildew and Photographs

As is well known (says a writer in Photography and Focus), mildew attacks paper, and for its ravages on a print there is no remedy. important, therefore, to keep pictures which we value in such a manner as to reduce the chances of mildew to a minimum, or at any rate not to increase them. Damp is the most favorable condition for the development of these microscopic fungi, and when the spores are present it is surprising how quickly they will develop in damp paper. We have known a batch of platinum prints which were wetted and then left under pressure in a copying press in order that they might dry quite flat, come out after a few days' interval badly spotted with marks which nothing could remove. For this reason it is well to get prints dry as soon as is conveniently possible; never, for example, pinning them up in a damp dark room and leaving them hanging there for a week or two. Nothing may happen for a dozen times, but the thirteenth may result in the ruin of a batch of prints. A formaline bath would destroy any spores there might be in the paper, presumably, but there are always many floating in the air, which would soon settle and do mischief.

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HOW TO COMMENCE GUM BICHROMATE PRINTING

By J. J. WESTCOTT

FOR those who have not yet attempted gum bichromate printing this article is written with the object of showing the greatest simplicity of the process, and in the hope that it will induce many readers to take up this most fascinating of all printing processes.

The materials necessary for a first attempt are few and cheap. They consist of gum arabic, bichromate of potassium, a mop camel-hair brush for coating, a 3- or 4-inch flat hog-hair brush for smoothing, pigment, paper, and a

spray for developing.

Take one ounce of gum arabic in lumps and dissolve in three ounces of cold water. This is best done by wrapping the gum in a piece of muslin and suspending it in the water. If this is done over night it will be found to have dissolved by the morning: the muslin retaining any insoluble portions of gum and foreign matter often to be found mixed therewith. If stored in a well-corked bottle it will keep

in good condition for a considerable time. Carter's, Le Page's or Stafford's can be used.

Make a saturated solution of potassium bichromate. This is practically a 10 per cent. solution, and is best made up with hot water. It will keep indefinitely.

Either moist water-colors, in tubes or pans, or the dry powder colors may be used. The beginner is recommended to use the dry colors as they are more easily measured. In the early and experimental stages of working the pigment should be carefully weighed. Windsor and Newton's are good.

All papers that are well sized can be used. Some of the ordinary note-papers will be found to work admirably, especially that known as "Parchment Wove." It is a fairly smooth paper with just sufficient grain to hold the pigment and make the coating easy. "Strathmore" (charcoal kid finish) or "Whatman"

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can be used with success. Very smooth papers should be avoided as it is almost impossible to give an even coating. Michallet is another very good paper with a beautiful grain and is easy to work.

One large mop camel-hair brush for rough coating the paper; one 3- or 4-inch long hog-hair varnish brush for smooth-

ing.

The sensitive solution is made up as follows: ½ ounce gum solution, ½ ounce bichromate of potassium solution. To this add 30 grains ivory black. The pigment is first rubbed down for two or three minutes with a small portion of the gum with a palette knife or old flexible table knife, until all signs of grittiness disappear. Add the remainder of the gum and bichromate; thoroughly mix, and strain through a piece of fine muslin.

The coating of the paper should be done in diffused daylight or gaslight. Pin the paper to a drawing board with a layer or two of blotting paper beneath, an inch or two larger all round than the paper to be coated. Dip the camel-hair brush in the sensitive solution and roughly go over the paper from left to right and right to left. Let each stroke slightly overlap the previous one. Without loss of time take up the flat hoghair brush and by a series of firm strokes drag the mixture down from top to bottom of the paper. It will now be found that a series of straight lines has been formed by the brush. must at once be broken by other brush strokes at right angles from left to right and right to left, but with decreasing The coating should now be smooth; but if the gum has not yet set, brushing should be continued in all directions by holding the brush very lightly in a vertical position and letting the tips of the hairs just touch the surface of the paper. Do not continue the brushing after the pigment has commenced to set.

Should the coating work stiffly and it is found impossible to smooth out the lines made by the brush, there is probably an excess of gum. If on the other hand the coating takes some time to set and draws up into small transparent patches, then there is insufficient gum in proportion to the amount of pigment.

Pin up the paper to dry in a dark room or should it be desired to use it immediately it can be dried before the fire. When bone dry the paper should be stored in a calcium tube, and will then keep in good working condition for many weeks.

The brushes should be washed immediately after use, for if the sensitive mixture with which they are impregnated is allowed to become insoluble they will be ruined for future use.

The class of negative best suited for this process is one that is fairly thin and without any very pronounced contrasts —just such a negative as one would make for bromide enlarging.

Printing is done in an ordinary printing frame in the usual way. As there is only a slight visible image, it should be carried out by the aid of an actinometer or by placing a piece of P. O. P. under a negative of similar density; and if the paper has been prepared as stated above it will be found to be approximately the same speed as P. O. P.

This should be done in a good light as immediately the print is wetted it

becomes insensitive to light.

There are several methods of development. It may be automatic by simply placing the print face downward in a deep dish of cold water, and allowing the soluble gum and pigment to be dissolved and washed out. This may take twenty minutes or several hours, according to the depth of printing. Development may be carried out by means of a spray. The latter method gives the worker great control.

The form of spray is that which is used by artists for fixing drawings, and may be obtained of any dealer in artists' materials. Printing for this method of development should be carried further than that for automatic development.

The print is first placed in a dish of cold water and allowed to soak for about one minute. It is then transferred to a piece of glass or ferrotype plate, and gently sprayed. The spray should at first be held about eighteen inches from the print, and care should be taken not to use too much force until the condi-

tion of the print has been ascertained. Should the image not appear after a short time, the print is returned to the dish of water and allowed to soak for a few minutes. As the spray is somewhat vigorous in its action, it is advisable to have a certain amount of resistance in the print. It is well, therefore, not to print too lightly, or a great deal of the power of control will be lost.

In conjunction with the fixing spray mentioned above, a vulcanite throat spray (to be obtained of any chemist) is very useful. It is not so powerful as the fixing spray, and by placing the nozzle close up to the print one is enabled to locally develop any small area.

When development has been carried far enough the print is hung up to dry. Should a yellow stain be left on the paper by the bichromate, it can be removed by immersing the print in a 5 per cent. solution of alum for about ten minutes.

If the paper is kept too long or in a damp place it will become insensitive or fogged. If the yellow stained back has changed color the paper is stale and useless.

The worker has an almost unlimited choice of papers and practically unlimited choice of colors. No safe edge, no reversal of image (as in carbon), very small cost, and a very considerable degree of control in development.

Let not the beginner be discouraged by a few failures which he is almost certain to encounter at the commencement of working, but persevere until he has mastered the technical part of the process. The development of a gum print will then be one of the greatest pleasures of his photographic work.

GETTING GOOD PHOTOGRAPHS OF DIFFICULT MECHANICAL SUBJECTS'

By R. BIGELOW LOCKWOOD

A CERTAIN commercial photographer recently made the remark that he would rather photograph almost anything else than a polished steel ball, which bears out the contention that the simplest mechanical objects are often the hardest to photograph.

That the inoffensive polished steel ball can store up trouble for the photographer and bewilderment on the part of the advertiser who sees the finished print, is attested to by a case which not long ago came under the observation of the writer. It was desired to show a life-size picture of a steel ball about three inches in diameter, and the advertiser insisted upon retaining the highly polished surface as an argument in favor of accuracy and finish.

Accordingly, the ball was carefully polished with chamois to a high degree of brilliancy before being placed in position in front of the camera. The

1 Courtesy Printers' Ink.

result, as shown by the print, was startling. Every detail of the interior of the studio was faithfully reproduced on the surface of the sphere, including the skylights, furniture and those who happened to be standing behind the tripod watching the taking of the picture. And directly in the center of the ball was a dark object which proved to be a perfect miniature of the camera itself. The impression of a steel ball was absolutely lost in the maze of reflections.

A second trial was made by coating the ball with a thin film of putty, but this had the effect of deadening the highlights and causing the object to resemble the exterior of an egg in texture. Various ways were tried to catch the proper effect without lending an air of grotesqueness, and finally the following method solved the problem:

The ball was placed on a small pedestal and surrounded with a square frame covered with white cheese-cloth and open at the side toward the camera. The entire camera was then covered with cheese-cloth, a small hole being cut for the lens. This arrangement diffused a pure white light over the surface of the ball, free from reflections, yet preserving the high-lights which the coating of putty had killed. The result was perfectly satisfactory and brought out the polished surface minus the distortion formerly caused by the reflected image of the studio and its properties.

It may be said here that this simple method of killing reflection is ideal for the photographing of small mechanical objects in general—such as small tools, wrenches, taps, dies, etc., where the problem is to retain polished surfaces

without the evil of reflection.

That the method is successful is further proved by the fact that if properly surrounded by cheese-cloth, and the camera properly covered with the same material, it is possible to photograph a large garden globe without catching reflections.

Air-brushing the Object to be Photographed

The greatest ally of the camera is the air-brushing outfit, but how generally is it known that for the photographing of small objects a judicious preliminary use of "air" applied to the subject itself will often help to bring out details which otherwise would be lost? For example, the advertiser who wishes to photograph a watch fob in the form of a medal can many times bring out the design by first squirting on a little air over the surface of the metal. And likewise the practice of chalking the raised name of a machine on a casting will bring out the name strongly in the picture.

These are common tricks of the studio, but the purpose of this article is to place before the reader certain practical points regarding the taking of pictures of difficult mechanical subjects and preparing these photographs for the copy, rather than to attempt to cover the intricacies of a profession. The usual advertiser is not a photographer, but rather an individual who has in mind certain

results, and is often at a loss regarding how best to get them.

When it comes to the taking of shop pictures showing machines at work, it should be remembered that the commercial photographer is rarely a shop man, and hence needs proper direction; not in the matter of how to take the picture but what to take. It is the business of a good photographer to study his lights and to calculate the duration of his time exposures rather than to sense the value of some extraordinary heavy cut being taken by a tool.

The truth of this was forcefully brought home to an advertiser of a line of machine tools who secured permission from various users throughout the country to send a photographer to their shops for the purpose of taking pictures of machines in operation. Twenty-five shops granted the request, and a copy of Bradstreet's furnished the names of photographers in the different cities. These photographers were written to and told to "get some good pictures of

the machines in action."

The results were disappointing in the extreme. From the standpoint of good photography, the pictures were excellent,

handled.

but almost without exception the views were taken without regard to the value of the work performed. The camera had been set up and the pictures shot with no definite purpose in mind other than to secure a picture of the machine. In many cases the cutting tools were hidden or else the machine was engaged in some freak job inadvisable to advertise. It was obvious that the governing factors had been the direction of the light and the space, rather than an appreciation of the mechanical value of the job and the method by which it was being

Taking this spoiled lot of prints as a guide the concern tried again, using different methods of approach. This time the letters asking permission stated frankly that the photographer who would call was not mechanical, and asked that the company turn him over to the shop superintendent or someone familiar with the work of the machines who could properly direct the picture taking. The result was a complete reversal of the

former experiences and a valuable quantity of really informative prints was secured. Full particulars regarding the jobs were later secured by sending duplicate prints back to the various shops with the request that the data be written on the back, and the pictures returned.

The "Close-up" Brings Out the Details

In preparing shop photographs of this kind for copy, a good lesson may be drawn from the "movies."

Perhaps one of the most appealing tricks of the screen is the "close-up" in order to get the proper emotion across. A scene is flashed showing Marie Bickford standing at the old gate waving a tearful farewell to her lover who is en route to make his fortune in the great Marie is too distant to register tears, so a "close-up" is flashed of Marie's face filling the whole expanse of screen and filling the hearts of the audience with her pearly flow of teardrops. Or perhaps the hero receives a telegram. Feverishly he tears it open and then clasps an open palm to his high forehead. What is in it? (We're speaking here of the telegram.) question is answered by a "close-up" of the sheet telling us that Vivian has eloped with the Count de Varville.

Excellent results along somewhat similar lines, only put to more practical purpose, may be attained in the photographing of machine tools where it is desired to impress the reader with the action of the cutting tools at work on a job, the ease with which the shifting of a lever throws out the gears or the mechanical details connected with some particular part of the machine. As in the case of Marie Bickford, whose distance hides her tears from the close inspection that calls forth the sniffles, so the usual photograph of a machine fails to focus attention on any particular detail, and the point desired to be brought out is hidden in the picture of the machine as a whole.

Right here is where the "close-up" is useful. This "close-up" may be an enlargement of a small section of the big picture, or perhaps it represents another shot, taken at close range, of the cutting

tool or detail of the machine to which particular attention is to be called.

In order to get the best effect, the "close-up" should be trimmed in the form of a circle and implanted partly on the face of the big picture, encroaching upon the white space to avoid confusion between the two pictures. It is also advisable to define the outline of the circle by a thin band of gray or white where it overlaps the main picture.

Another effective treatment in handling the "close-up" is to bring it entirely outside of the main picture, and carry an arrow down to the section of the machine of which it is an enlargement, in order to tie the idea together and link the close-up to the main photograph.

After a picture has been taken, it usually remains for the retoucher to put on the necessary finishing touches before the engraving can be ordered, and right here exists a degree of misconception in some quarters regarding the way to judge good retouching.

A certain retoucher of exceptional ability who specializes on retouching photographs of mechanical subjects tells a somewhat amusing incident which illustrates this point. It appears that upon presenting a number of retouched photos to a client, the advertiser found fault with the charges, claiming that the prints did not show much retouching, and consequently the work was not worth the price. And by way of explanation, the retoucher was informed that a good retouching job was "laid on thick."

It took some diplomacy to clear away this erroneous standard of valuation, and to convince the advertiser that the retoucher commanded high prices because of the *little* "air" he used rather than the quantity. Almost any dub can smear on a thick coating of Chinese white, but the mark of the expert lies in his knowledge of how *little* retouching to use in order to get the most out of the subject. The gifted retoucher lets well enough alone wherever possible and uses his air sparingly.

Difficulties with the "Phantom View"

The camera is yet to be discovered which will photograph what is going on

inside of a sealed gear box or catch the action of the whirling jets of steam in the heart of a turbine. And yet, for advertising purposes, it is often highly desirable to show the interior workings of a closed chamber—hence the ghost cut.

To execute a phantom view of a difficult mechanical subject properly calls for a display of the highest retouching skill, coupled with some engineering knowledge or leaning toward mechanics. It is customary to have the parts normally unseen and a well-finished job represents no small effort.

The final step in preparing photographs for copy lies in determining the size (unless the size of the finished cut has already been planned for at the time

of retouching).

It would appear almost unnecessary to caution care at this stage of the game, when the entire desired effect can be spoiled by ill-considered cropping, but many good photos have been wrecked on this rock of carelessness. For example, nothing but gross inattention can be responsible for cutting off a machine-tool operator's head just above the eyebrows. Far better to reduce the size of the picture slightly than to crop without regard to anatomy. Better to leave an additional operator out of the picture entirely than to bisect him horizontally.

Readers of technical papers are looking for the picture to tell them just as much as the copy. They are looking for clearness, accuracy of detail and atmosphere. Pictures, to them, are as interesting as the photographs in your newspaper, and a close-up of some new tooling method capable of saving time and money does not lack the inspection for which it was created.

See to it that they are not disappointed. A really good photograph is worth all the time and trouble it takes to get it.

CONTRAST AND CONSIDERATION

By FELIX RAYMER

NE of the greatest problems so far as I can learn is, "How is the operator to get contrast in his negatives when he is using a large light, without having it curtained." I have been asked that question oftener this year than any other that occurs to me at this time. I am satisfied that the reason for it is that a year or so ago there was a great move on by many of the best-known workmen to use all the light they could get in the room. Consequently, they would open up the entire skylight and make a snap-shot at the subject, and when asked about their way of work would say, "Oh, I never do any curtaining, as I can get all that I want by simply opening the light and making the sitting as quickly as possible, and they come out all right." There is no doubt but there were and are many good things made in this way. But it takes fully as good an operator to make them as it does to

make good negatives by a small source of light, or one that has been curtained down to a small opening. If he were not a good workman he would be producing the same class of work made by hundreds of others it matters not what method he follows in his work.

I have decided to answer the questions as propounded above through the JOURNAL, for in that way I feel that more will have the benefit of hearing it than would be the case in any other way.

First of all, I will call attention to the little line drawing used in connection with this article. It will be seen that I have attempted to show the operating room and the light as well as the camera, subject, and the arrangement of accessories. The light as will be seen measures fourteen feet in width, for both the side and top lights. The side light begins three feet from the floor, and extends upward six feet, making its highest point nine feet from the floor. The



BY L. L. HIGGASON

ASHEVILLE, N. C.

top light beginning at the beam, which divides it from the side light, extends upward twelve feet. Now all of these measurements mean something, or they would not have been made. What matters it whether the light is accurately measured or not, if the measurements are not to play any part in the making of the picture?

We will suppose that we are to work this light open. By this I mean that there are to be no curtains of any kind on it. Just an open hole in the house with ground glass to keep out the rain. We are to get all classes of negatives from it, showing those of soft delicate gradations, and on down to those showing strong contrast, or concentration. Some may think such a thing cannot be done, but all that is necessary is a trial, when it will soon be apparent that any class of work can be made.

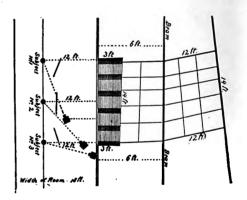
I will now call attention to the place in the room marked "Subject No. 1."

It will be seen that the subject is posed just the same distance from the side light that the top light measures in height, measuring from the beam between the lights upward. It will also be noticed that the subject is placed at one end of the light, even with the edge that joins with the wall of the room. This allows all of the light to fall on the subject from the front, unless the subject were to be turned so far from the light that it would fall on the rear, in which case there would be no light on the front of the face at all. The catch lights in the eyes would be nil, and there would be heavy shadows running through the entire front of the face. It is but little trouble to tell about the distance the subject should be turned from the light. After he has been posed at the right distance from the light, all that is necessary is to have him begin turning away from it, very slowly, until the light on the ear on the

shadow side of the face has disappeared, and there stop. This light falling on the ear, is the key note to the whole situation in working a light without a curtain, it matters not what the size of the light. As long as there is any light on the shadow ear, there will be the appearance of two sources of light, so it is necessary to get all the light away from that side of the face, or rather off that ear.

Now to control the light so as to have the strongest light at the top of the head, or in other words on the forehead, it will be necessary to have a small side screen made of opaque goods so that it can be stationed close up to the subject, shielding him from the full force of the rays of light that fall on him from a lower source than the top of his head. It will be remembered that our light begins within three feet of the floor. That would throw a light on the subject from a point lower than the head, making the lower part of the face as strong in light as the upper part. This would give a flat effect, on the one side, of light, and on the other side, of shadow. The subject will have to be shielded from this lower light. This small screen will answer every purpose I use a small background which measures five by five feet, and it is placed so that the light all falls on the subject from over the top of it. None is allowed to escape around the sides, and strike the subject from a lower point than desired. If the ground or screen is too far from the subject it will not shield the face as it should, as it is this that allows the light to get around the sides. I have found it a splendid idea to notice the shadow that falls from this screen on the floor, and when the shadows from the edges on both sides of the screen are of the same length, and come to a point where the chair is placed, the screen will have been placed as it should to get the best effect. If one of the shadows appears longer than the other, it is because the screen is placed at an angle to the subject. Arrange it so that it will throw the shadows from both sides to a peak, making them of the same length. This screen is also a great aid in lighting white draperies. It cannot be done away with where the light is being used open, if the correct value in draperies is to be obtained. Use it the same for draperies as directed for shielding the figure.

With the subject posed at the place in the room mentioned, and allowing all of the light to fall on him from the front, there will be no reflected light necessary on the shadow side of the face, as the natural result of such lighting will be softness, and the shadows cast by the nose, eyebrows, and chin will be thin and full of detail. Therefore to get softness under the open light it will be seen that the subject should be so posed that all of the light is in front.



Some one will prefer a stronger lighting, but he wants to make it without having to put on curtains. This can be done as easily as in the first case. All that I will do will be to bring the subject up under the light to the position marked No. 2, which as will be seen is the center of the light, allowing as much light to fall on the subject from the rear as there is from the front. But it will also be noticed that I have held the subject at the same distance from the side light as for the first nega-This distance from the light is imperative, if the light is to be left free from curtains, and the operator does not use a head screen for cutting off the light from the top of his subject's head. If the subject were posed nearer the light than it measures in height, it would allow the light to fall on the shadow ear from the top, and thus



BY L. L. HIGGASON

ASHEVILLE, N. C.

destroy the idea of the face having been lighted from one source. This would also destroy the modeling of the face, giving heavy shadows under the eyes and nose.

After the subject is placed at No. 2 have him turn as before until all of the light is off the shadow ear, and then bring up the little side screen until it throws the two shadows from its sides at a point on the posing chair, and the light will be made. Now some may object that with this pose too much back light will result. This would be true if we were not to turn the face to the light as far as we can without getting the light on the shadow ear. But by having done this we will have placed the light on the face in the same way that it was in the first case, with the exception that the shadows are longer and stronger. The shadow formed on the cheek, where the light from the skylight leaves off and the shadow begins, will be sharply defined, making the

cheek bone stand out stronger and higher, and it will likely be necessary to use a light reflector on the shadow side to break up the sharp effect in the shadows. The shadow from the nose will extend down to the corner of the mouth, and both edges of it will be sharply defined so that they may be seen clearly.

Now, for still greater contrast, we will move the subject up farther under the light until he is at No. 3, but have him face to the same end of the room as in the first and second cases. Also have him at the same distance from the light, and then have him turn slowly as before, until all of the light is off the ear, and the same lighting will have been made, after the little screen is in The difference will be in the shadows, which will be very hard and strong, and a reflector must be used to soften them. It will be seen that we can get any degree of strength to our work by an open light.

I will now call attention to the camera and its relation to the subject as he was posed in the different parts of the room. It will be seen that in No. 1 the camera is out much farther in the room, and that it is not facing so far away from the light. In No. 2 the camera is nearer the light and is facing away from the light more, while in No. 3 this is still more noticeable. But in all three cases the camera is placed at the point where about a "three-quarter" view of the face would be obtained.

If a full view of the face is wanted, do not have the subject move his head to get it, but move the camera, as in moving the subject's head the lighting would be changed. Therefore it is well for the operator to make his lighting with the three-quarter view of the face in his mind, and after that if different views are to be made, move the camera to the point that will secure them.

The little side screen should stand about as shown in each position of the subject, to get the effect desired.

COMMERCIAL PHOTOGRAPHY

Furniture

HIS is an important branch of commercial work in regard to which strict attention requires to be paid to a number of distinct points, otherwise the photograph will not be at all satisfactory to the furniture-maker. In the first place, it is most essential to use a long-focus lens. For whole-plate work it should be not shorter than 16 or 18 inches. No need for an expensive largeaperture anastigmat-you will have to stop down considerably in order to get sufficient depth in the subject, and at such small aperture and with a lens of such long focus, the definition with an R. R., or even with a single landscape lens, is quite satisfactory. Such a longfocus lens calls, of course, for plenty of space, which can usually be got when the work is done at the furniture factory. If it must be done in more confined quarters then there is nothing for it but to use one of shorter focus. In such circumstances use the longest focus which will give you the subject on the plate, even if that means, sometimes, photographing each piece of a suite separately, when, under more favorable conditions, two or three could be photographed together. The separate pieces can be afterward combined into one print, as directed below.

Another important point is the height of the camera. The manufacturer is

particular that both the top and the legs of, say, a table are shown. It will not do to go for one to the neglect of the other. In the case of tables, sideboards, chests of drawers, it is necessary as a rule to choose a somewhat high position for the camera; couches and chairs usually allow of a somewhat lower viewpoint. Look at the illustrations which furnituremakers use in their catalogues, and you will see the description of drawing which is required in photographs and, by suitable choice of lens-focus and viewpoint, can be obtained. At the same time the direction in which the lens should point must be such as to show the depth of the article. In setting up the camera the first thing is to get these conditions right, and then to bring the picture central on the plate by means of the rising or swing Also the plate itself must be brought vertical with the swing back; if this is not done a certain amount of distortion is introduced, which the photographer perhaps may not think of much moment, but which the designer of furniture will quickly detect.

The lighting requires to be soft and diffused. In a studio the whole area of the glass should be closed by the white blinds, the working area of which is reduced by bringing the dark blinds into operation as the character of the subject may require. In the case of furniture having much carving on it, the source of light requires to be much smaller in order

to give satisfactory relief, but at the same time it should be of a diffused nature, otherwise the trouble as regards reflection patches is an obstacle to the best results. Away from the studio one requires a good supply of butter muslin with which to cover workshop windows, also a supply of white sheets to serve as reflectors in evening illumination on the shadow side. Remember that soft illumination is got in proportion as you work further from the window. Highly polished furniture often gives a lot of trouble in the way of reflections, and sometimes requires the erection of a species of tent around it in order to secure illumination of the requisite diffusion and at the same time to exclude other objects in the shop, the outlines of which are reflected to the lens by the polished surfaces of the woodwork. Where furniture, such as sideboards and wardrobes, contains a mirror, you must on no account let the latter cast the reflection of other objects, but must arrange a white screen (without creases), so that, in the photograph, the mirror shows as an even, bright surface.

The background as a rule should be white, or medium gray, for very light furniture. Furniture negatives, almost without exception, have to be blocked out, and, therefore, a ground which facilitates this after-work is an important

item in the process.

Correct, or even exaggerated, rendering of the grain of the wood is again a point in respect to which the furnituremaker calls for the modern skill of the photographer. Some makers are ready to arrange for goods to be photographed "in the white," a plan which greatly helps the photographer in the way of reducing reflection troubles, but at the same time makes it necessary to adopt special means to bring up the grain of the wood. A common method is to apply a mixture of equal parts of paraffin and petrol. This immediately shows up the grain to an extent which photographs well even on an ordinary plate, and better still on a color-sensitive emulsion. The treatment does not harm the wood as regards its further finishing for sale, the paraffin-petrol mixture evaporating in the course of twenty-four hours. An

alternative, which has been recommended in cases where manufacturers have an objection to the use of an inflammable mixture such as that containing petrol, is to give to the wood a thin application of cedar oil, such as is now so largely used in connection with the mops sold for domestic cleaning. It is said to have much the same effect as the mixture already mentioned.

But where the goods have to be photographed in the finished state, a proper rendering of the grain requires the use of a panchromatic plate. The results will be hopeless without it. With some light woods the panchromatic may be used without a filter or with a pale filter such as the Wratten K1; but as a general rule a deeper filter is required and proves astonishingly effective in revealing grain which would be lost altogether in a negative on an ordinary plate. Kodak Company, who issue a booklet, "Modern Method of Photographing Furniture," recommend the Wratten G filter for all-round work with their panchromatic plates, the red A filter, or even the F filter, for furniture of great age or darkness of wood.

Panchromatic plates are equally an absolute necessity in making satisfactory photographs of upholstered furniture. If they are not used the colors in tapestries, etc., will play all kinds of tricks, and though one may get a satisfactory result now and again on an ordinary plate, the latter cannot be depended upon to yield regularly a result which will satisfy the manufacturer. For such upholstered work about the most generally suitable filter is a deep yellow screen such as the Wratten K3.

As in many branches of his work, the commercial photographer requires to study the illustrations which manufacturers have obtained in the past from draughtsmen, and to imitate them as regards their general arrangement, while adding the full and accurate rendering of detail which photography alone can give. For example, you will generally find in furniture catalogues that the pieces of a suite are grouped together as a number of separate drawings all upon the same scale. The same result can be obtained by photographing each piece

separately, blocking out, and cutting up the negatives to form one which consists of the separate pieces mounted on a larger sheet of glass. According to circumstances, two, or, perhaps, three, pieces can be photographed at one time, and the work of assemblage thus reduced. Or by use of a set of masks fitted close against the plate at the time of exposure the pieces can be obtained all on the one negative, the latter being afterward blocked out to print with a white background.

Miscellaneous Small Articles

The important points in photographing, for catalogue illustration, such articles as watches, bracelets, and other jewellery, clocks, purses, and other leather goods, and even somewhat larger pieces like boots or hats, may be conveniently grouped together, for, although each class of goods requires individual attention, the precuations which require to be taken apply in the main to all of them.

The first point to emphasize is the use of a long-focus lens. It is even more necessary to use a lens of long focus when dealing with such small articles as these than it is when the subject is a big thing like a piece of furniture. And for this reason. Many of the photographs of small articles are required to be the same size as the original, which means that the distance from the lens to the object is only twice the focal length of the lens. Now, unless the lens is of decent focal length, that is altogether too near a standpoint at which to get proper "drawing." You want to use a lens of focus such that the distance from lensboard to object is at least 3 feet. If you are copying same size, that means that the lens requires to be of 18 inches focal length; if half size, of 12 inches focal length. It is better to err in the direction of having the focus too long than too short, and for this class of work a telephoto lens often comes in very useful provided the definition given by it is thoroughly good, as it is in the case of the more modern telephoto objectives of the fixed-focus pattern. However, the small aperture of a telephoto is sometimes an objection, for I think one never gets such a brilliant result in photographing at f/44 or f/64, and one requires to allow for that by arranging a stronger lighting. Generally speaking, if a camera is available with ample extension, an R. R. or single lens of from 18 to 24 inches focal length is excellent for this class of work.

Very often these photographs require to be made upon a given scale, say, same size as the original, or half-scale, third-scale, and so on. It is therefore a good plan to fix up the camera once and for all for doing this, since many of the objects are none too easily measured, and an immense lot of time can be wasted in adjusting the scale of reduction by measurement on the focussing screen for every individual subject. For this purpose a piece of newspaper is carefully cut out and pasted on a dark mount. It should be exactly 6 inches long after mounting, and any convenient width. A series of slips of card should be provided, their lengths being in proportion to the reductions required. Thus, 4, 2, $4\frac{1}{2}$, 3, $1\frac{1}{2}$ and $\frac{3}{4}$ inches will give a range of $\frac{2}{3}$, $\frac{1}{3}$, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{8}$ scale. The printed card must now be focussed, and its image made to correspond in length with each of the card gauges in succession, marking the position of the camera front or back, as the case may be, for each size, upon the baseboard, or upon a lath of wood which can be placed in some convenient position between the camera back and front. This having been done, all that is necessary when, for example, it is desired to photograph a vase to half scale, is to extend the camera to the point marked $\frac{1}{2}$ on the scale, and to focus by sliding the camera to or from the object. In the case of a studio camera it will often be found more convenient to move the object. On no account must the extension of the camera be altered. It should always be clearly understood whether a photograph is to be made to "size" or to "scale." Full size and full scale mean the same thing; half size and half scale do not. If an object 6 inches long is reduced to 3 inches, that is half scale but is only quarter size.

As regards the arrangement of a number of small articles for photographing, several methods can be followed. In the first place, one should see what can be obtained either from the customer or from a firm of shopfitters in the way of small fittings used for the display of the particular goods in shop windows. manufacturer will usually have no objection to allowing the use of a supply of these when it is explained that they will contribute to providing an effective display of the goods, although they need not necessarily appear in the finished photograph. Another plan is the vertical camera with a flat glass easel below it, a method which is very suitable for small articles which are approximately viewed from directly above. On the other hand, many small articles require to have their thickness recorded more or less prominently, and for them a glass plate may be reared up at an angle and the goods either fixed to it by little dabs of "Plasticine" or slung on its surface by lengths of cotton of color to match the paper background which is placed behind the These shadowless methods of arranging the subject give a very effective display, and any little shadow is afterward most effectively put in with an air brush when preparing the prints for reproduction.

Very suitable backgrounds for goods of these kinds are afforded by the stout mounting papers of "nature" tint sold in sheets of about 28 by 26 inches. Such a sheet can be pinned up to a pair of boards fixed to each other at right angles so that it forms both a background and a foreground which merge into each other through the curve of the paper at the

angle of the two boards.

What has been said before on the necessity of backed plates applies particularly to these small articles, and for many of them the use of panchromatic plates and light-filters is an absolute necessity if one is to get a proper rendering of textured articles of dark color, such as purses, etc., of crocodile leather.

Machinery

A first word of advice which I would give as regards dealing with such subjects as engines, pumps, lathes, and other machine tools, is to endeavor to learn

something of their functions. If you do, you are more likely to make photographs which the engineer will appreciate. And oftentimes you can suggest the taking of further photographs, which can be used not merely for showing an appliance but for explaining its working.

There is a good deal to be said for the use of a comparatively small plate, say, half-plate, as against the 12 x 10 which many photographers appear to think is the orthodox size to be used in undertaking jobs of this kind. In a nutshell the advantage of a small plate, or, rather, of the lens appropriate to it, is that one can secure depth (i. e., definition over the different parts of the subject) without so much stopping down as is necessary when a larger plate and lens of longer focus are used. The larger stop has an advantage other than that of shortening exposure. I think it gives better rendering of shadow detail. As machines have generally to be photographed in the often confined quarters in which they have been made, a wideangle lens is most frequently necessary, although, if one of longer focus can be used from a more distant standpoint, by all means use it, for the sake of the better proportion in which the machine will be shown. But taking working conditions as one most often finds them, there is a great advantage in using, say, a 4-inch lens on a half-plate as compared with an 8-inch on a 12 x 10. The angle of view is about the same in each case, but with the same stop (that is, the same actual diameter) the speed of the 4-inch lens will be, say, f/22, while that of the 8-inch will be f/44. As the depth of definition will be the same in the two cases there is the obvious advantage of shortness of exposure, in addition to the lower cost of plates. And as regards the final result, a 12 x 10 enlargement from the half-plate negative will be at least as good as could be made directly. But the enlargement requires to be well done, preferably by illuminating the negative by day-light or by the reflected light of an arc lamp, in either case, in conjunction with a lens used with a In other words, one medium stop. requires to make sure of a degree of critical definition in the enlarging process altogether greater than is sufficient in dealing with a portrait negative.

The results with machinery depend a good deal upon the finish of the machine. The dark green, chocolate, or red paint, which forms a fair proportion of the surface of a machine tool as it is issued to the customer, is very bad for photographing, and engineers, in recognition of this fact, very generally arrange for the photographing to be done when the machine has received its first coat of gray or fawn-colored flat paint. Even then, bright metal parts, especially gunmetal, require to be dulled with putty in order to prevent their coming out as choked-up high-lights in the negative. Where these metal parts are in deep shadow there is often an advantage in dusting with French chalk after rubbing with putty. Another means of bringing these bright metal parts into good condition is to coat them with a thin whitelead paint slightly grayed with a little lampblack. This, again, can be used with advantage for essential bright metal parts which the construction of the machine casts into shadow, the paint being mixed lighter as the shadow is deeper.

The same kind of touching-up applies to the lettering on the frame or other parts of the machine, which will come out very badly indeed unless specially prepared. For this purpose there is nothing better than a dabber made of an old kid glove stuffed with wool, by which a little very thick oil paint—black or white, as the background may happen to be a light or a dark one—is applied. The paint is first spread thinly on a glass plate and distributed with the dabber, by which it is transferred to the tops of the letters, just as a printer does when inking his type. Chalk, which is sometimes used for the same purpose, is not nearly so good, as it photographs coarse.

Almost all machine photographs, from those of a locomotive to a small machine tool, require to be blocked out, and therefore the background does not matter very much, except in so far as it serves to facilitate the blocking out of the negative. If there are other machines or any miscellaneous gear behind the subject proper the work of blocking

out is made much more difficult, and essential parts of the machine itself may easily be removed by mistaking it for a part of the detail in the background. For this reason a background should be rigged up wherever possible. In many engineering establishments some kind of a screen can be found, if it is only the reverse side of a tarpaulin. One requires to ascertain beforehand if a background will be available, or if it will be necessary to bring one's own, and, in that even, the size which is required.

The lighting of large machines which cannot be moved from where they are placed calls for a good deal of judgment and for a determination not to be outdone by difficulties. As far as possible cross lighting (from windows on opposite sides of the machine) should be avoided. It leads to a lot of awkward reflections and makes it difficult to obtain proper relief and roundness in the photograph. Very often the lighting is too hard and strong, and also, from its position above the machine, is a cause of strong shadows which are further accentuated by the dark, dirty floor of many engineering The lighting can be greatly improved as regards softness by covering windows with butter muslin, or, better, if it is possible, by rigging up a muslin screen between the machine and the window and as near to the latter as it can be got without obstructing the view of the camera. As regards the floor, a lot of improvement is made by laying down newspapers around the machine and so reflecting light into the shadows. But these means by no means exhaust the expedients which can be used in making the best of unfavorable conditions. Heavy shadows can be further relieved by the use of a mirror or by burning a little magnesium ribbon; also, if an electrical connection is available, by lighting up dark parts with a fairly highpower lamp, such as a half-watt attached to a good length of flex. In carrying out these fakes it is not a bad plan to take a hint from the producer of cinema plays and to lay out on the floor the angle of view from the lens to the extreme parts of the subject included on the plate. This can be done, after a glance at the focussing screen, by fixing a pair of

strings in V-fashion, that is, with the point of the V underneath the lens and the two ends just beyond the parts of the subject which fall on the plate. With these strings as a guide it is a much easier matter to manipulate a mirror, lamp, or magnesium ribbon; in any given position you know that you are not encroaching on the field of the lens. Remember here that in all such work where one is using supplementary strong lighting the lens should be fitted with a good hood for cutting out direct light from it.

Where the lighting conditions are of the worst, for example, where a machine is placed with its back to a window, the best plan is to block up the window altogether (or, if that cannot be done, to arrange for the job to be carried out after dark), and to make the photograph by artificial light. For this, I have found that magnesium ribbon is preferable to flashlight. For one thing, it is not viewed with such suspicion by factory managers, and it calls for less arrangement for getting a diffused lighting. Four or five strands of the ribbon are plaited together and kept in motion during the exposure.

Another hint—machines as a rule require to be photographed from a standpoint a little to the right or left in order to show one side or another, and at the same time, high enough to show a little of the top. It should hardly be necessary to refer to this point, but I have seen so many photographs of this kind taken dead on that it would seem advisable to make a mention of the point.

(To be continued)

HOW TO MAKE YOUR STUDIO A SUCCESS

PART II. PRACTICAL ADVERTISING

BY "PROFESSIONAL"

THE soundest sentences ever written on continuity are the wise words of Nathan Fowler, one of the world's most experienced and practical promoters of publicity. This undisputed authority says:

"In continuity is strength; In disconnection is failure."

The strength of nature is in the continuous force of it.

The fundamental principle of motion is

everlasting.

The biggest fish are in the brook that runs on forever. The brook that dries up this month and is a torrent next month is unhealthy, unsightly, and but a transient drain-pipe. The strength of its torrent is offset by its periodical dryness.

The man who feeds his horse on Monday, and gives him nothing to eat on Tuesday, may have a weak horse on Wednesday and a dead horse on Thursday.

If some imbecile should come out of the unthawed North to preach the doctrine of continuous change of business base, or habitual renovation of interior arrangement, the business men would take him gently by the hand, lead him into nature's solitude and leave him there.

The child who goes to school on Monday, skips Tuesday, and attempts to connect Monday's lessons with Wednesday's studies, is handicapped by conditions diametrically opposed to progressive education.

The merchant who pulls down the top of his roller-top desk, with everything done and nothing to be continued, has no right to be a business man, because there is no business in him.

Never to be finally finished is a rule of

progress.

This world is for workers, that there may be no shirkers in the continuous by-and-by.

Let the writer present a personal remi-Before him for many years niscence. was the regular, beautifully engraved calendar of an insurance company. For years he did not realize the necessity of insurance. When he became a man he went directly to that company and took out a policy. The name of that company, by long association, had become engraved in his memory. He did not appreciate that advertisement as an advertisement. He did not realize that it influenced him until he wanted insurance, and then that company received some of his money.

Some men succeed by intermittent

advertising.

Some men jump off a high bridge and

do not get killed.

It is the weakest kind of logic to say that because one man can successfully antagonize the natural laws of success his isolated example is worthy of following.

No business man of sense will close his store every other day, or every other

week, or every other month.

The fact that a large proportion of the successful business houses are doing business under firm names of a quarter of a century ago furnishes undeniable proof of the tremendous inertia of continuity.

Ninety-nine per cent. of successful advertisers are continuously advertising. They figure business on the hardest slate with the hardest pencil. They do business for revenue only. They do not consider advertising a luxury. They do not break advertising connection because they do not care to break trade connection.

Trade connection can be broken, and advertising connection can be broken, and the firm can still remain successful. A man can keep his books with the top of a flour barrel for a desk, but the successful man does not. The shrewd business man is not satisfied with the minimum of success. He is forever striving for the maximum of success. Sometimes he cuts expenses; but when he does he cuts harmoniously, and not all in one place. He does not stop advertising. He advertises a little less.

Experience, backed by the law of general averages, proves that the first appearance of an advertisement does not

bring business or even create much curiosity. The second appearance does little else than suggest attention; the third may mean business, and the fourth may mean more business; the fifth impresses the reader, and the sixth is felt by the advertiser.

The man who expects his advertisement to bring business or create comment immediately is as foolish as the man who finds fault with the water because it does not boil as soon as he starts the fire under it. The strength of advertising is in its latent power.

To discontinue advertising is to destroy a large proportion of the preliminary education of the possible customers who are beginning to feel its

influence.

Few people buy anything the first time they hear about it.

The occasional appearance of an advertisement may have less effect upon the reader than the punishment of a child by one blow a week until the allotted strokes have been administered.

An advertisement in the paper today and out of the paper tomorrow, in the next day and out the day after, breaks the reading connection. The public sees an advertisement in today's paper and temporarily forgets it. It thinks about it tomorrow and looks for it then. Yesterday's paper is lost and the latest paper does not have it. The public forgets again, and no merchant ought to allow any of his possible customers to forget him twice.

Good, healthy seed may have been sown in fertile ground and the Sun of Publicity put out before it had a chance to root. The ground closes over and has to be ploughed over again—and reno-

vation costs money.

There is not a solitary case where intermittent advertising has brought returns compared with that from continuous advertising. It is the everlasting pounding away at the public, day in and day out, with something fresh every time or old things freshened, with the same space, or some space, in the same place.

Because a few advertisers have made, once in a while, occasional advertising pay, there is no reason why exceptional methods should be considered. An un-

seaworthy ship may survive continuous trips and profits pile up, and the ship may go down empty, but only the fool risks his goods in a wornout vessel.

Not the success of the wrong way, but the success of the right way is the way

that points on to success.

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The continuous advertiser gets the bulk of the business because others are not advertising and he is.

Disconnected advertising is as bad

as a disconnected lecture.

Think of a speaker talking for half an hour and stopping in the middle of a sentence and beginning a week afterward where he left off.

Would you hire a carpet-layer to put

down one strip of carpet a day?

It is absolutely necessary to connect the advertising periods, and much cheaper to connect them with continuous advertising than to do the extra amount of advertising, after the break, to make

up for the break.

A man starts in with a four-inch ad. runs it two months, then stops it two months, then begins with the same ad again. Now, half the strength of the first two months' advertising is lost and will take two months' extra advertising to connect the new with the old advertising. Remember, the readers have had a chance to forget, at the expense of the advertiser. To a certain extent he must begin all over. It would have been cheaper to have run a small ad during those intervening two months. connecting advertisement, even though a small one, gives the advertiser the advantage of being a continuous advertiser, and prevents the reader from forgetting him.

Outside of necessities three-quarters of everything purchased is purchased in the mind of the purchaser from a week to six months before the purchase is made. The buyer may not realize this; he may think he is buying on the spur of the moment, because he does not take time to think out his motives and, therefore, does not admit that he began to think about buying long before he made the

purchase.

Does not the man who wants a furnace consider its purchase long before the actual transaction? Yes! and women have their sealskin coats purchased, in their minds, even years before getting them. But, mark you, the merchant who has kept them interested in seal-skin talk all this time is the one who will get their money.

Again, look at furniture; very little of it is bought on the impulse. Most of it is considered and reconsidered long

before purchased.

Practically all things, even some necessities, are purchased after consideration.

It is continuous advertising that impresses the public with the stability of a firm.

Further, it is continuous advertising that keeps alive the flame of desire and focusses its light and heat on the shop of the advertiser.

In every country the continuous advertiser is a successful advertiser, and experience plainly suggests that it is safe to follow successful practice, and much more safe than to trust to successful exceptions.

When we see men building gigantic plants and making millions of profit, all the while advertising, never letting their names drop from sight during seasons of selling and seasons of quiet, we feel convinced that the advertising that pays is the continuous kind, or that the continuous kind is the advertising that

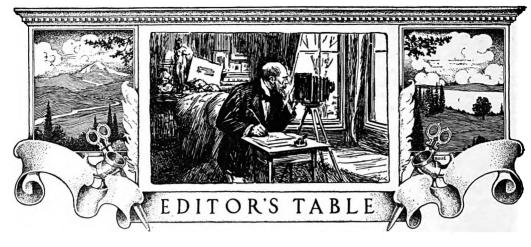
pays.

Many a merchant and professional man has considered the advisability of discontinuing his advertising during the dull season, but when he confronts the fact that the successful advertiser does not do so, he accepts accepted principles and keeps on advertising, knowing that so long as the strength of everything, from love to politics, is in continuity, so long must the good of advertising be in the constant, never-let-up method.

Remember, the principles of advertising are the same in all lines. The well-proven rule of continuity is just as essential to the photographer as to the merchant or manufacturer.

IN going to conventions it's the idea we bring home that counts.

E. B. Core



PHOTOGRAPHY AND ADVER-TISING

In the days of the daguerreotype the photographers had to be content to make portraits. The art science of photography was so new that its thousand and one possibilities were then undreamed of. Unfortunately there are too many photographers who are yet little farther than the daguerreotype stage, in spite of the advances made and the possibilities open to the man with the camera.

The most noteworthy feature of the present-day popular magazine is the great number of advertising pages to be found within its covers. In some cases the pages of advertisements exceed the number of reading-matter pages, and if the truth must be told they are often far more interesting, and are often carefully glanced over before the magazine matter proper is looked at.

Why is it that the advertisements are so attractive a feature of the magazines? Chiefly on account of the numerous pictures they contain. It is true that there are larger and more beautiful pictures used in the non-advertising portion of the magazine, but they are what we expect—good straight pictures. In the advertising section we find photographs pressed into every kind of service, cleverly worked up to fit in with the story the ad. has to tell. We like to see the other man's ideas of what he thinks is a story-telling picture. The man who is

advertising his goods is paying a very high price for the privilege, and he is employing the best men he can get to have his advertisements convince you. There is more live interest in many advertisements than in some magazine articles. We all use soap, eat biscuits, buy insurance, and hope to own an automobile, but we are not all interested in the "Home Life of the California Condor," nor are we all deeply interested in the true story of "Beatrice Cenci," to take two illustrated articles from a current magazine.

The reader may possibly ask the reason for this long preamble; it is simply to point out to the photographer that the advertising field offers an immense opportunity. Clever photographs are in constant demand, and command a good price. Why cannot the photographer who has not a constant stream of sitters every day, occupy some of his spare time in working up pictures for the advertiser? Opportunities were never greater.

What are the qualifications of photographs for this class of work? Technically, they should be as good as possible, and the subjects should be simple, direct, and convincing. A glance through the advertising pages of several magazines will give a good idea of the kind of pictures at present in demand.

Children and pretty girls make the best subjects and are most in demand, and, fortunately, the photographer has ample choice. Experimenting in this class of work need not be expensive; small negatives are just as useful as large ones, and solio makes bright and effective prints. A well-known Philadelphia photographer furnishes attractive cover designs for a very popular weekly. The Eastman Kodak Co. are offering annually a series of valuable money prizes for good photographs of this description that should make an attempt attractive and opportunities are increasing on every hand for profitable photography for advertising.

ARE YOU PROGRESSING?

T is not so long since, when photography was in its first crude or infantile steps, that business flowed naturally to the humble tent, wagon, or city studio. Fairly rapid were the transitions in those days from the mournful black and white silhouette of our forefathers; from the Daguerreotype, ambrotype, leather and tintype to the photograph which has endured, with some modi-

fications, to the present time.

Many of us can possibly recall the surviving picture of the Frenchman Daguerre, the inventor of the Daguerreotype; he is represented sitting in an ordinary chair upon the back of which, his elbow resting, his head is supported. The early types of that process, by reason of iodine being the sole excitant with silver, required a very long exposure. It is stated that Daguerre, who had been requested to sit for his portrait upon the roof of his laboratory, which was in the blazing sunlight, for better illumination, exclaimed, after fifteen minutes of this torture, while tears of physical as well as mental suffering coursed down his cheeks: "Pshaw, this art will never amount to anything!" He lived of course to see, through the efforts of his confrère Niepce de St. Victor and his own, together with the improvement in lenses, a spontaneous recognition of the art. The most elementary results in those days were appreciated and looked upon as little short of miraculous; they found a sale and at good living prices.

All this is now changed, and mediocre work commands only a price commensur-

ate with its quality. A public that received its education apace with the photographer began treading upon the heels of the very best workmen. For a time there was an era of almost nauseating sameness in the work of studios. The public could not accept forever the conventional monotonous posing, lighting and finishing. Given a picture or two at random from a hundred or more studios, cut off the names, and the collection would pass for a "group" of exhibition work from any one of the contributors. We are all aware of the causes that made this necessarily so.

The same formulas, plates, paper, mounts (haven't you all given orders for cabinet mounts of from one to twenty-five thousand of just that color?), backgrounds and lighting were leading all to a uniformity of result. This was done by nearly everyone as long as the pictures sold; but there came a reaction, and the tiresome sameness coupled with low

prices was the cause.

The old existing conditions, which we have tried to sketch briefly, together with some new blood and sinew recruited from the ranks of the seried hosts of the amateur, were responsible for what has been termed a new school or force in photography. Minds unfettered by conventional work were better fitted perhaps for initiating a method unlike the then

accepted work.

There are, however, notable instances of old-time and professional photographers joining, nay, leading in the highly original and commendable results. The artist painter passed through just such a probation, and after using wooden mannikins and getting wooden results, employed living, breathing models. We have all heard of the collection of oil portraits by a rising young artist whose solicitous friends gave an exhibition of his labors by collecting as many as they could of his best, and when hung found that they were all in left profile view.

Grace and naturalness should go hand in hand, but in most studios nature is continually interfered with in the effort of following out the conventional and obsolete stock poses.

At this point it may be proper to add a few words that might clear the way for

a betterment in output and increased income, for one must follow the other. A good many up-to-date, progressive photographers have been quick to see that a change has been taking place and was necessary, and are by this time well on the way and extremely happy over the result. No two workers have adopted the same course; we cannot prescribe one for you, because the clientele you have cannot be known in every instance. If perhaps you will calmly look the situation over you may perceive that you have been working in a rut. Once this perceived, the way We all know good from bad work, and, if bad, the work must be improved. Successful conventions offer the pleasantest way out of the difficulty. Comparison of work; comparison of localities where so and so is successful with such and such work; your own ability in an artistic way; all this and much more is to be considered. best journals, all of them profusely and beautifully illustrated. Note the names of the best workers, those that appeal to you most. Don't imitate, but digest well and make copious notes. perfectly familiar with all the different kinds of work. Do not condemn any accepted work hastily, for you might have to eat your own words on attaining more light.

Are you working under a good light? Do you light a sitter according to his requirements? Do you contrast your lightings with the proper background tones? For brilliancy, do you vary the distance from sitter to light? Is your chemistry as good as your light handling? After doing your best under the light does your dark room work support you in that? Are you too indolent or too parsimonious to take a few extra steps and to use up a few more plates than just

barely enough? Finally, are you up to the times and are you paid enough for your best and most earnest efforts? Do you send your work out promptly, clean and neat? This is the age of refinement and cultivated taste.

THE WORK OF L. L. HIGGASON.

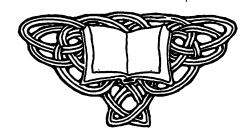
E are sure our readers will be interested in seeing the excellent prints we present this month from the studio of L. L. Higgason, Asheville, N. C.

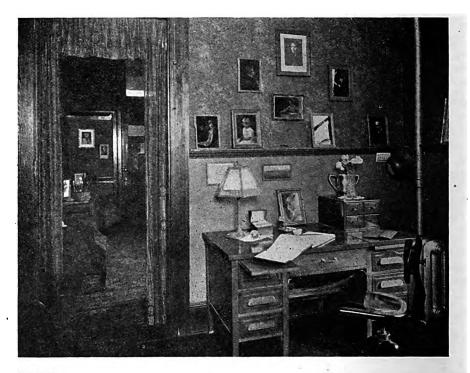
Mr. Higgason is thoroughly progressive and alive to the growing possibilities of professional photography—attends the important conventions and is on the lookout for new ideas. That he is reaping the benefit of this wise policy is evident.

Asheville, a city of some thirty thousand, is one of the most popular mountain resorts in the South. There are fine hotels and many prominent visitors come from the North—so the opportunities are constant.

That Mr. Higgason is well regarded in the community is evident from the fact that he is a member of Asheville Board of Trade; Asheville Rotary Club, and Asheville Motor Club, and that counts.

He is a man of good taste, as the interior of his studio and all that eminates therefrom bespeaks, and an artist as well whose original work is adding prestige to a growing recognition not only among his clientele, but in the profession. All his work, he tells us, is made with Wollensak lenses, and his prices range from \$15 to \$65 the dozen. Mr. Higgason has youth and progressive, up-to-date ideas, and his success is sure.

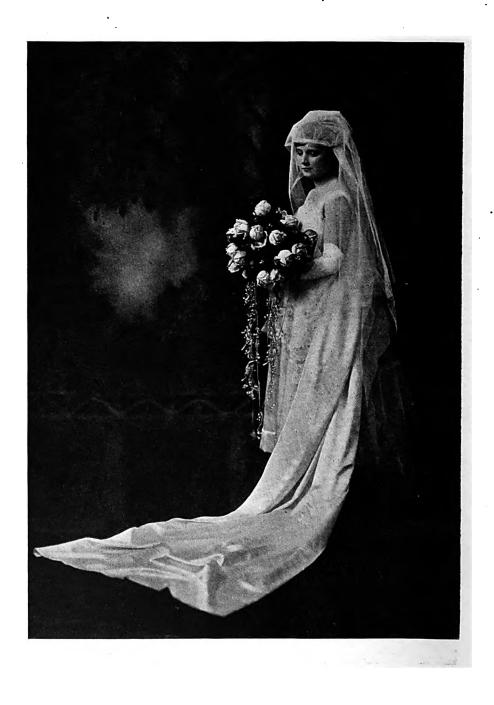




OFFICE

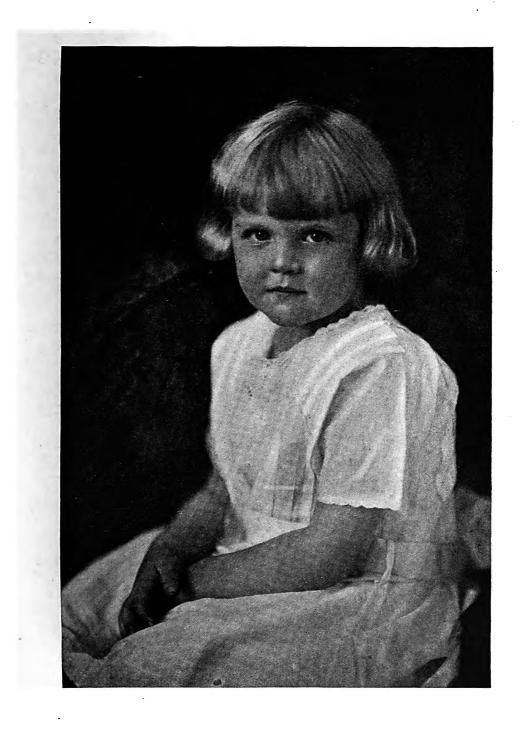


RECEPTION ROOM
STUDIO OF L. I. HIGGASON, ASHEVILLE, N. C.



By L. L. HIGGASON ASHEVILLE, N. C.





BY L. L. HIGGASON ASHEVILLE N. C.



PRACTICAL PAPERS ON STUDIO WORK AND METHODS

The Studio Lens

To many photographers the choice of a lens is not an easy matter. Often there is a desire to make one lens serve a variety of purposes, not only portraiture in the studio, but outdoor groups and even general subjects such as views and buildings. Usually, a compromise of this kind provides very inferior means for each separate branch of work. The better course is to decide in one's mind what is the bulk of the work for which a lens is required and then, as far as my be, endeavor to select an instrument which, at a pinch, will be of service in other directions. In regard to studio portraiture, the choice of a lens is fairly plain sailing when the studio is of ample length, say, 24 feet and upward. It is when one has to work in a small studio that the difficulty of selecting one lens suitable for the various classes of portrait become much greater. We are talking now simply about the focal length of the lens, on which, entirely apart from any question of type or aperture of lens, depends the ability to take portraits ranging from full-length to heads within a given limited space. For example, in a studio of 18 feet length, the

For example, in a studio of 18 feet length, the longest focus which can be used with comfort for a full-length cabinet portrait is 8½ inches; a half-length cabinet, or cabinet head can be taken with a lens of 10½ inches focus. Now it may be set down as an ideal that for a cabinet portrait of any kind a lens of 10½ inches to 14 inches is the best which can be used; a shorter focus means a nearer standpoint of the camera, and results in portraiture which is unpleasing, for the reason that the drawing by the lens is in too "violent" perspective. Thus, in the case of a small studio the wisest choice, as regards focal length, is the longest focus which can be used for cabinet heads and half-lengths. Full-length portraits, which usually are less frequently taken, had better be provided for by a second lens of shorter focus. By so doing, the most important class of work gets the best optical service.

When the studio is of ample length these diffi-

When the studio is of ample length these difficulties practically disappear. In one, for example, of 24 feet length, a cabinet portrait full-length may be taken with a 12-inch lens, and a 16-inch lens used for a cabinet head. There is no particular advantage, but frequently the reverse, in using a lens of more than 14- or 16-inch focus for a half-plate portrait. The disadvantage is felt in town studios where the atmosphere between the sitter and the lens may often be misty from dust or fog to a degree which is quite sufficient to lead to flatness of the negatives caused by the scatter of light, and particularly felt when an artificial light installation is used. In such circumstances means require to be taken to reduce as far as possible the illumination of the space between the sitter and the camera. As it is impossible in this article to suggest a choice of focal length suitable for every individual requirement, we may usefully quote here a table from the "Almanac" which affords a fairly reliable

guide in the matter. It is not drawn up on hardand-fast optical lines, but is compiled with a view to the working conditions in a studio.

Length of studio,	C.D.V. full length, inches.	C.D.V. half length and cabinet full length, inches.	C.D.V. head cabinet half length, inches.	Cabinet head and boudoir full length, inches.	Boudoir half length, panel full length, inches.	Boudoir head panel half length, inches.
12	41	611	81	91	121	14
14	431	7 1 1	9	101	131	16
16	5 1	81	10	10 1	16	18
18	5 <u>₹</u> 6	8 1	10 1	10½	16	18
20	6 7	10	101	12	18	20
22	7	10½	12	14	22	22
24	81/2	12	14	16	24	24
28	8 1	131	16	16	24	24
30	10	13½	16	18	24	24

In the case of the short studios (up to 20 feet) the focal lengths recommended are about the longest which can be used. In studios of 24 feet length and upward somewhat greater focal lengths might be used, but, for the reason which we have just given, there is no particular gain secured by so doing. It should be noted that in each case it is assumed that 5 feet of the studio length will be taken up by camera, operator, sitter, and background. The figures in column 1 are the full run of the studio, including this 5 feet. Therefore, where an operator can make do with a foot or two less for the sitter, the camera, and himself, or, as is sometimes possible, can obtain an extra run through a doorway at one end of the studio (when taking full-length portraits), the distance can be added to the studio length in the table and a studio of correspondingly larger size selected as the indication for the choice of focus.

So much for focal length, in regard to which the photographer is often compelled to choose not as he would, but as he must. As regards the aperture, and therefore the type, of lens which can be used, one's choice is governed not by the size of the studio, but by the descriptions of subject coming within the scope of work. If portraiture (single figures) is the chief consideration, then there is nothing better than the portrait type of lens, the aperture of which is f/3 or f/4. The aperture and construction of this lens make it the most rapid in use, but it is not a very suitable choice for subjects such as groups, and it is of very little use indeed for outdoor work.

The covering power of a portrait lens, exquisite and brilliant as it is, is limited. For cartede-visite portraits a lens of 6- to 8-inch focus

¹ Full lengths may be obtained with these focal lengths, but the standpoint is so near to the sitter that good perspective cannot be expected.

is required. A 10-inch or 11-inch portrait lens is required for a cabinet, and a 17-inch lens for a whole-plate. Stopping down, while it increases the covering power a little, is liable to introduce flare spot and to render the lens useless in many conditions of lighting. fore, if a lens is required for both portraiture and groups as well as for outdoor subjects, about the best compromise is the somewhat costly anastigmat of f/4.5 or f/5 aperture, which is fast, has much greater covering power, and, of course, of great flatness of field, which last property is not necessarily an advantage in much studio portraiture. If expense is a consideration a smaller aperture, f/6 to f/6.8, may be chosen, but for pure portrait work, par-ticularly of children and in dull weather, such apertures are hardly large enough. Generally speaking, the best selection is a portrait lens for single figures and an anastigmat, or even a good R. R., of aperture from f/6 to f/8, for indoor and outdoor groups. A final point requires to be considered, namely, provision of means for securing negatives of softened or diffused definition. Some portrait lenses, e. g., the Dallmeyer and Wollensak are fitted with a ready adjustment for soft focus without detriment to the normal sharpness. They allow of diffusion or sharpness being obtained at will and at the full aperture of the lens. In addition to these, there are a number of lenses specially made for yielding soft focus at the full aperture, sharp definition being obtained with a fairly small stop. Such lenses are moderate in price compared with a portrait lens, and may usefully supplement one of the latter which is not of the type adjustable to soft focus.—British Journal of Photography.

Backgrounds for Portraits

The photographer who attempts portraiture at home is often beguiled into thinking it necessary to imitate some of the conventions of the professional studio, and buys painted canvas backgrounds of landscapes and interiors. He is probably following a very bad example. It is only lack of observation, or else force of habit, that leads people to tolerate some of the backgrounds as they are employed in much professional work.

It is still quite a common thing to find in a photograph a painted landscape or seascape ending abruptly in a foreground carpet, on which stands an elaborate chair occupied by the sitter. Or a commonplace person in outdoor dress is posed before a crude painting of the interior of a baronial hall. These are the last things an amateur pictorialist would dream of imitating. On the other hand, advanced professionals have a wide range of backgrounds—artificial and natural—in their studios, and these they employ with knowledge and skill to suit their sitters and produce a harmonious and convincing result. But here again the resources are so elaborate and varied that the average photographer cannot hope to command them. Even the apparently simple accessories of the effective and popular "sketch portrait" are beyond the scope of many of us. The appropriate background and floor-cloth can be used to advantage only with suitable lighting arrangements, and both negative and print

require modifications demanding considerable skill and practice.

The beginner who proposes attempting indoor portraiture at home generally confines himself to head and shoulders, or, at the most, half-lengths. He will therefore be well advised, if he uses canvas backgrounds at all, to adopt only those of a flat uniform tint. These are very useful and appropriate for his purpose, and they need be only of such a size as admits of their suspension on the wall by means of picture hangers. A patterned wallpaper is generally unsuitable, but a self-colored paper or a distempered wall of suitable color will answer the same purpose as the canvas background.

A picture in the background can sometimes be introduced with good effect, but it requires skilful management. It is also sometimes possible so to place the sitter that the space beyond him is occupied by a darkened room or passage. If the subject is well lighted the result may be very striking and effective, and the background will actually suggest space rather than a substantial barrier. The very antithesis of the plain background may be used, in the shape of material with a strong and decorative pattern; but this is suitable only when used in conjunction with elaborate ornamental dress worn by the sitter. It may be taken as a safe general rule that the plainer and more unobtrusive the background the better.

It is because this rule holds good also with outdoor portraiture that the advice is so often given to avoid such backgrounds as fences, trelliswork, brick walls, and foliage. Whether in sharp focus or not, such details detract from the portrait, because they are too elaborate and complicated, and demand too much attention. Hence the application of such terms as fussy, busy, fidgety, and restless. The head may be arranged to come against a distant mass of shadow, and so stand out in relief against a background that is quiet and natural; or it is sometimes possible to include a peep of simple landscape which is the genuine thing which the painted canvas of the professional aims to imitate. Successful studies of figures have also been made with the sky only as a background: but it is by no means easy to secure good tone values in both figure and sky at the same time.

Of course, a plain background can be used out of doors as well as in. It may be merely a plain and suitably lighted wall, a flatted canvas, paper, or uncreased fabric of appropriate tone and texture.

With animals or children out of doors the artificial background is seldom satisfactory. It is time well spent to hunt about for a suitable setting which is more natural and appropriate. Lastly, although it is outside the scope of this note, it must be remembered that suitability of background is often of equal importance in the rendering of many subjects other than portraits and figures.—Photography.

Reconstruction

CREDIT men who have made a study of business for years tell us that reconstruction in business is coming within the next few years, possibly slowly, but we will never do business as we have done it in the past, and that during such periods we should watch our credit and under no circumstances expend it.

The large manufacturers and wholesale business houses of the country are demanding prompt payment, in fact, prompt payment is

the order of the day.

Many a photographer's profits are tied up in his accounts and for this reason he cannot discount his bills. He loses that 2 per cent. per month. If prompt payment is a necessity with large business concerns, it is certainly so with those who only run a small business.

those who only run a small dushiess.

Do not think for a moment that you are going to lose trade because you demand prompt payment. The very person you demand it of respects you for it if their credit is any good, and if it is not good the quicker you find it out the better. Just because you know every man, woman and child in your town or city you must not think you can afford to wait from sixty days to six months for your money. In fact it has been said that the man who cannot make money from his friends can never make money in business.

Limit your credits and collect all accounts promptly.—Ohio Photo News.

Appearances

Some people say that "appearances are deceptive," and others that "the first impression is everything." Although these dicta are apparently contradictory, there is truth in both, and our present object is to point out how outward appearances react on the success of a photo-

graphic business.

In photography, more than in most businesses, the impression made upon a prospective sitter is of the greatest importance. A shabby exterior, a dark and uninviting approach, or a dingy, untidy reception-room will probably act as a deterrent to the better-paving class of customers. The visitor will go no further than to make an inquiry as to prices, and retire as quckly as possible. This fact is more readily realized by women than by men, and may account for the fact that many women have started successful studios, while men who could turn out better work have failed to attract patronage. To the woman the trimmings are of primary importance, and she starts fitting-up her premises with much the same idea that she has in furnishing a home that is, to make it an attraction to others and a source of modest pride to herself. Now it is not necessary to go to work in an expensive manner to achieve this end; the only thing necessary is to start with some definite scheme, and to keep it in view throughout. As the first contact with the public is usually by means of the showcase or window, we must start with that, and endeavor to make it as bright and attractive as possible and always keep it so. Many places have been opened with an imposing array of plush and gilding, which for lack of care has in a few months become faded and dingy, giving the impression that no business is being done; while others started on more simple lines have by constant change and scrupulous cleanliness continued to attract the favorable notice of passers-by. Supposing that we succeed in doing this, the entrance and staircase, where there is one, should be respectable and well cared for. Dirty walls, with the paint or paper peeling off, worn linoleum, and dirty windows do not lead people to expect clean, artistic work behind them. This can all be remedied at small cost, and should at once be done where such a state of affairs exists. Many old-fashioned photographers have experienced a serious drop in their takings when a rival concern has opened near them, not because the work was better, nor even as good, but because it was put forward in a more attractive way.

The reception-room is often allowed to degenerate into a sort of rubbish store. Obsolete furniture from the studio, parcels received or ready for despatch, frames, and out-of-date specimens cover the tables and chairs and utterly destroy that appearance of daintiness and comfort which is so necessary to the production of a complaisant mood on the part of the visitor. One old photographer always called his receptionroom the drawing-room, and always kept it quite free from business lumber. Even his specimens were kept out of sight until they were required, the comfort of his patrons being apparently his sole aim. Others have made their receptionrooms interesting and profitable by displaying paintings, rare furniture and curios, which not only served to pass the time while waiting, but which were ultimately sold. While on this subject it may be worth pointing out that the personal appearance of the proprietor and his staff should be as carefully looked to as the other decorative items. Photographers used to have a reputation for slovenliness, and it is to be feared that some still merit it. They should take a lesson from the jeweller and other tradesmen who have to deal with ladies, and not appear in frayed, chemical-stained habiliments, while their assistants should be trained to those habits of neatness in dress and person which are expected to be found in a good-class business. One lady photographer insists on a uniform style of dress on the part of her receptionists, but this is going a little too far. Still, it is better than a tawdry blouse and a faded alpaca apron, which have been seen in studios of some pretensions.

The studio is a workroom, and need only be kept scrupulously clean and free from unnecessary lumber. The camera and stand should be kept well polished even if of old pattern, and anything in the way of greasiness on the furniture avoided. Velvet and leather chair-seats need keeping in order, as a lady does not like to risk soiling a nice dress. We have seen a lady refuse to sit on a greasy-looking chair, while others doubtless shuddered when they did so. The fittings of the dressing-rooms should be inspected daily, combs and brushes frequently washed, and a white drugget kept ready for use for wedding and evening-dress sitters. If powder and cosmetics are furnished, the pots and bottles should be kept free from smears and dust; actresses may tolerate dirty "make-up," private sitters will not. Nothing succeeds like success. and if trade is quiet the world must never know, for people like to feel that they are patronizing a fashionable establishment, even if they have to wait for their portraits. One of the most successful American portraitists has told how at the beginning of his career he found sitters were not so numerous as he had hoped for, so resolved upon a bold stroke. He filled his diary with imaginary appointments for a fortnight ahead, and declined sitters who would not wait for a vacant date. At the end of the period he had booked more genuine appointments than he had ever done before, and since then he has never looked back. When anything is difficult to obtain people are sure to want it, and when the sitters who had booked told their friends how terribly busy Mr. So-and-so was, they immediately felt that he was the right man to go to. Few British photographers would care to take such a risk as our American friend did, but it is well to keep up the impression that business is flourishing, and that it is only as a special favor that early delivery can be promised.

One little matter must not be overlooked, that of stationery. We receive many letters upon notepaper the quality and printing of which would disgrace a chandler's shop. When people contemplate patronizing a self-styled artist they are apt to judge his artistic skill by the style of the communications he sends to them, and nothing is so detrimental as poor stationery. We do not advocate florid designs or bizarre coloring
—the simpler the better—but the type should be artistic and the paper as good as we can get in these times. The money so spent will not be wasted. It is only invested, and will return increased a hundred-fold before many days. The whole point is this-that the photographer must appear to have some self-esteem and confidence before he can expect the public to trust him, and therefore should make as good an all-round show as circumstances permit. - British Journal of Photography.

Fishing

THE warm winter weather with no ice on the brooks and ponds, naturally reminds us, who are fond of the sport, of fishing, and we hope to start early this spring.

Did you ever go fishing and meet some other fisherman who had a nice string of fish and seemed to be catching them with a rapidity that surprised you? You start fishing only a short distance away and after an hour's trial become discouraged because you cannot even get a bite.

discouraged because you cannot even get a bite.

What was the trouble? Simply that you were not using the right kind of bait for the fish.

Another time you may have the luck, and you will see those around you only get an occasional fish while you have a nice string. This time you had the right kind of bait.

So whether you open up a new studio or continue your old one, do not think because the fish will not take your kind of bait that there are no fish there, and do not think because you are not doing as large a business as you think you should that the business is not there. Either your advertising is not the correct kind of bait, or the finished work which you are putting out is not exactly right, or the fish who come into your studio do not receive the right kind of treatment; at least something is wrong. You are not using the right kind of bait, and the thing to do is to find out where the trouble is and correct it as soon as possible.—Ohio Photo News.

Art Pictures

"Bread-and-butter stuff" is what keeps the business going. We have no argument against that statement, other than to say "Amen" and urge that the "bread-and-butter" be of the best quality possible.

But we have never become convinced that the so-called "art picture" should be cast out and tabooed from the average studio, for it is the greatest little advertiser in the business. It is a reputation-maker of the first water. The public may never have the least desire for an art portrait, but it will go into raptures over a beautiful picture, and if it is very unusual they will talk it all over town. People will come to look and remain to buy.

There is also the general impression on the public to take into consideration. When the prospective customer comes into a studio and sees on the walls and in the showcase nothing but "bread-and-butter stuff," and much of that without any artistic merit, they jump to the conclusion that the proprietor is not possessed of any artistic ability at all, but is purely a mechanic of more or less skill in his trade.

But, on the other hand, if there are on the walls of the studio a few pictures that are distinctly artistic, whether they are portraits or studies, they exert a favorable impression on all who enter. They attract attention. They hold the eye. They give a sense of pleasure that adds to their confidence in the maker of them. Whether they want "bread-and-butter stuff" or not, they hold the maker of those pleasing art pictures in higher estimation. It helps the profession in general, as every photograph of high artistic merit is an advertisement for our profession.

The art picture is a very necessary adjunct to practical photography. Let us have more of them.—Trade News.

Useful

HERE is a useful formula for stripping the film from a negative: Soak the negative for ten minutes in a 10 per cent. solution of formaline, then rinse and immerse in 1 ounce water, 1 ounce wood alcohol, 20 minims glycerin, 40 minims hydrofluoric acid.

As soon as the film begins to come away at the corners it can be stripped from the glass. This solution does not cause the film to enlarge.



VIEWS AND Reviews



Prospects

Some experts claim to know exactly what the trend of business will be for the coming year, but we notice that these experts do not agree altogether; so we can only conclude that even those who are sure of the course of events are not quite certain, or, rather, different men are sure of their different opinions. There being no absolute certainty, one man's opinion is as good as another's, so we venture to express our opinion.

While we do not expect as big a year as 1918, we confidently expect a year well above the average for the following reasons: There is a very large amount of money in circulation, and this is being spread out through the distant parts of the country and will continue there for at least a year. While the war conditions were young, certain industrial centers benefited by this inflated expenditure and the outlying districts did not participate; but this year the shoe is on the other foot, and the industrial centers are likely to be nearer normal than the rest of the

Big business had a tremendous impulse last year, and was getting up a very respectable momentum by the time the war closed. It will take a longer time for this momentum to subside than it did for it to get going, for wages and profits are high, as well as the cost of living, and everyone knows perfectly well that both have got to settle down to normal some day, but each wants the other to come down first. This difference of opinion cannot be settled in a moment, and both wages and prices will have to recede in pretty much the same proportion. So long as wages are good, business will be good, even if prices are high.

The volume of trade has made a record for itself, and there exists a very strong conviction in the minds of the people of the country that war business will be more than made up by business from other sources, from Europe, from South America, and even from far countries that have never before traded much with us. We are not in a position to give much information as to this, but the hope that exists will keep business going throughout the country for some time.

The Government of the United States, in order to provide food for the world for the coming year, and acting on the supposition (which, in our judgment, was the only correct and proper one), that the war would last a year longer, agreed to guarantee to the farmer a price of \$2.20 a bushel for wheat. Had the war continued, this measure would have been of the greatest benefit to the world. But the war stopped, and the Government is faced with an obligation that it cannot repudiate, so it is necessary to lay aside one billion dollars to make good the guarantee to the farmers. As a matter of fact, this money is

diverted from munition makers to the farmers, and all American citizens would rather see this money spent for peace objectives than for war munitions. This money will be circulated through the rural districts and should have a very decided sustaining effect on business.

very decided sustaining effect on business.

Then the habit of buying will keep up for some time, and until this is checked business will continue good. There are good habits and bad habits, and some habits that are good at one time and bad at another. Spending is one of the latter. It is well to spend freely when one has enough money to be able to afford to spend freely, but it is bad to spend when one cannot afford it. We fear that when the habit has become fixed, it will take a jolt to break it, and the spenders will go right ahead, whether they can afford to or not. At least some of them will.

Another indication of easy money is the spread of wildcat speculation. In one locality, it is oil. In another, it is coal. In another, copper. In another, stocks of any old kind of industry that promises something extraordinary in the way of profits, and if what we learn through the papers is true, these wildcat schemes are taking Liberty Bonds at par for stock in the wildcat schemes, and a large number of people are falling for the lure of gain that is held out. The manipulators are shrewd enough to know that people who have saved a little and put it in Liberty Bonds will give them up more easily than they will the real money, and the shrewd promotors know also that Liberty Bonds are just as good as money, only easier to get. Some of these operators have become wealthy from this method of parting the people from their Liberty Bonds. But it is still a flourishing business, and the Government has issued warning to all people to be careful and not fall into the clutches of these wildcat operators who sell worthless stocks for good bonds.

These arguments seem to us to outweigh the pessimism of a few who look for a sharp reaction in trade. We counsel a conservative method of purchasing, for price changes will be irregular and unguessable. It is no time to buy against an advance, but it is the time to buy so that if a drop comes it will not be crippling. Yet it is necessary to buy enough to satisfy the buying public that wants goods and is going to take them in good volume, irrespective of price. It would be suicide to stop buying altogether, and yet it is foolish to overload. And if you do have to take a loss, be a sport—a good, true, American sport, and do not whine and kick over a loss because of an error in judgment in buying. We are all in the same boat, and every last man jack of us is going to have to take some losses. There will be some who will never whimper and will not publish it to the world. There will be others who will let out a howl and want every one to know

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how much he lost, and will beg for help and sympathy. He will not get much of either, in our judgment, and we sincerely hope that Americanism will assert itself to such an extent that the business men of the country will be awake to the likelihood of taking losses, and will be sports enough to take their losses without yelping. If we will just approach the period of reconstruction in this spirit, we will get through fine and dandy.—Trade News.

The British Journal Almanac for 1919

THE British Journal Almanac for 1919 follows, . in the main, the lines of its immediate predecessors; but the restrictions due to the war have caused its bulk to be still further reduced. This reduction is most marked in "The Epitome of Progress," which the editor points out has had to be curtailed owing to the restriction on paper supplies; but even had this cause not acted we doubt whether he would have found anything like as much worthy of record during the period covered. The editorial article is entitled "Photographic Definitions," and is aptly described

by its title.

This is a standard and useful handbook for every photographic worker. Price, cloth, \$1.50; paper, 75 cents. G. Murphy, Inc., 57 East 9th Street, New York City, are the American agents.

Art Through Goggles

I HAPPENED in a commercial photographic studio the other day and espied a beautiful sunset enlargement the proprietor had made for a customer. It was one of the best I had ever seen. The clouds about the sun, which was just sinking out of sight, were particularly fine. And the landscape portion was in perfect harmony and relation with the rest of the scene; the expression wonderful. This picture would be accepted at almost any salon; and in the old days would have been medaled wherever shown. I thought at once that it was the product of some master pictorialist, and I asked the photographer:

"Who made that sunset?"
He replied: "That has a history. The other day a chauffeur came in and left the negative to be enlarged. I saw it was better than the ordinary and I asked him for particulars. He said:
"'I am not much of a photographer, but do a

little at it; and I always carry my camera in the car. While driving in the country recently I saw a man focussing on the view, so I stopped and looked at him take the picture. I noticed him take something yellow and put it on the lens before he exposed, and I asked him what it was. He told me it was a color screen, and that it was necessary in order to get the clouds right. He left, and I put up my camera and, as I did not have any color screen, I removed my goggles, which were yellow, and held them in front of the lens while I took the photograph."

"Why," asked the proprietor, "how could you tell the correct supports?"

tell the correct exposure?"
"'Oh, I just gave about what I guessed the other fellow did—and there you are!"— Flambeau.

Photograms of the Year 1918

Photographers in all parts of the world have come to look to Photograms of the Year for an annual representation and review of the world's pictorial photographic work, and there is every reason to think they will be completely satisfied with the volume—the twenty-fourth of the series—which has just been published. In spite of the difficulties attending its production, the annual is the same in bulk as the editions published during the last two or three years, and the reproductions show no falling off whatever in quality; the only difference being that both pictures and letterpress are on white instead of toned paper, and there is reason to think that many readers will prefer the enhanced richness of tone of the illustrations which occurs as a consequence.

Upward of a hundred pictures are reproduced, and if may be safely assumed that they represent the pick of the year's work, about twenty-five chosen prints from the United States.

Among the contributions, a résumé of "The Year's Work" is given by the editor; "Observations on the Pictures of the Year" are given by W. R. Bland; R. Child Bayley contributes some remarks concerning the Royal Photographic Society and Pictorial Photography; Antony Guest writes of "Some Aspects of Landscape and Portraiture;" "The Importance of the Beginner" is the peg whereon Ward Muir hangs comments of value to every amateur; Lt.-Col. J. T. C. Moore-Brabazon, R. A. F., talks of "Pictorial Photography in the Air;" H. Mortimer-Lamb deals with "Pictorial Photography in Canada;" W. H. Porterfield with "Pictorial Photography in the United States;" Henry B. Goodwin, "Pictorial Photography in Scandinavia;" "Pictorial Photography in Scandinavia;" Adriaan Boer, with "Pictorial Photography in Holland;" and José Ortiz Echague, with "Pictorial Photography in Spain.

This attractive collection is of special interest to every pictorial photographer. Price, cloth, \$2.50; paper, \$2.00. Messrs. Tennant & Ward, 103 Park Avenue, New York City, are the American publishers.

Mirrors, Prisms and Lenses

By James P. C. Smithall. Price \$3.25. The Macmillan Co., New York.

In spite of the existence of a number of excellent works on geometrical optics the need of a text-book which will serve as an introduction to the theory of modern optical instruments appears to be generally recognized, and the present volume, which is the outgrowth of a course of lectures on optics given in Columbia University, has been written in the hope that it may answer this purpose. In a certain sense it may be considered as an abridgment of my treatise on the Principles and Methods of Geometrical Optics, but the reader will also find a considerable mass of more or less new and original material which is not contained in the larger book. Anyone interested in the study of optics, and especially the lens, will find this treatise of uncommon value and assistance.

War Tax Regulations

THE President signed the new war tax bill on February 25, and the provisions of the tax went into effect at once. This law affects the following articles in the photographic trade:

Photographic cameras . . . 10 per cent. Photographic plates . . . 5 per cent. Photographic films . . . 5 per cent.

While the general provisions of the law were known in advance and some effort was made to prepare for them, there was no successful scheme worked out for handling the situation in the best manner. When the bill was signed there was a hurried conference, and the best plans were considered and those that appeared to promise the least disturbance to present conditions were adopted.

On cameras, the war tax will be charged as a separate item for the present. If the manufacturers decide to change the prices later and absorb the war tax in the new price, it will be

announced as soon as possible.

On films, the war tax will be added by some dealers as a separate item, but others will establish a new selling price, which will include the tax. This item is the most difficult to handle, as the unit prices are generally small and the 5 per cent. tax is always a fraction of a cent, so that on some items there is a loss and on others a gain to the seller. Final settlement of the best method of handling film prices will be announced later if any change is found necessary.—Trade News.

Unique War Photography School

LESS than fifty feet from Broadway, in three buildings at Columbia University, New York City, there was carried on, unknown to the general public, one of the great works of the war—the training of camera men to make for the Government a complete pictorial record of the nation's part in crushing kaiserism.

ration's part in crushing kaiserism.

From a recent copy of the New York Times we find the following information: When the United States entered the greatest war of all time it took the field with hundreds of photographers, scores of them doing all their work from the sky, and one of the first orders issued was that of the Adjutant General to the Signal Corps to make a complete photographic history of the

nation's war activities.

To answer this great demand for photographers there was established at Columbia University the army's first school of war photography. Unknown to the public, due to the strictness of War Department censorship, more than six hundred men were instructed at this school, equipped, and sent overseas for all sorts of war service. With armed guards at the doors of laboratories and instruction rooms, professors taught the art of fighting with a camera. In these laboratories many photographic discoveries were also developed that are still a secret of the Government.

Every division that went overseas had its unit of photographers. Every camp had its photographic unit, or one on call for service at a moment's notice. Hundreds of camera men were engaged in propaganda, in artillery photography, in the hospitals, in laboratories, on news assignments—and there are thirty-eight different kinds of photographers, assistants, and repair men recognized by the army. So there was a crying need of camera-man production when Captain Joseph D. Sears, of the Signal Reserve Corps, reported at Columbia in January, 1918, and set about the organization of the school.

The mere selection of candidates was a difficult task in itself. A student, on entrance to the school, was examined in photographic and military work. Some excellent "still" men were soon found to be hopeless as movie operators. On the other hand, daring veterans of movie campaigns were all at sea when put in a laboratory, and hardly one of the candidates but was more or less ignorant of military procedure.

Students learned in the laboratories how to make animated drawings, thousands of which were used by way of propaganda in every movie house in the country. Every parade in the country, whether for departing troops, Liberty Loans, the Red Cross, Knights of Columbus, or whatever it happened to be, had to be "covered" by photographers who were trained at the school for this work. Entire movies were written, cast, directed, filmed, edited, and put out by students at Columbia for the Bureau of Public Informa-New surgical operations were put into movies for the instruction of surgeons and physicians in the scores of camps and hospital clinics. Pictures were made of training-camp activities. Photographs taken by students served as the originals for thrilling war posters. The camera was used to identify soldiers and ammunition factory workers as well as enemy aliens, and such records alone involved a tremendous amount of labor.

One of the most exacting forms of photography is the making of color pictures. The school turned out men to do photographic illustrations for army manuals, construct lantern slides, and do highly specialized work in photomicrography color contrast, intelligence investigation, photographic surveying, and color map reproduction. The range of intelligence work done by students was alone stupendous. The chief factor—aërial reconnoissance—was taken over by the Air Division, but the men graduated at Columbia were fitted to reproduce code messages so that they could be studied by more than one expert at a time; to detect secret and sympathetic inks; erasures, fraudulent typewriting, forgeries, tracings, additions, interpolations, secret ciphers, and counterfeits.

Students learned the use of the x-ray in surgery in locating bullets and shell fragments, and in the study of fractures, dislocations, and internal abscesses. Men were trained to do special work for the artillery. Under modern methods a high-velocity bullet can be photographed in flight almost as easily as can a cow walking across a meadow. Students learned to take pictures of projectiles at proving grounds, of targets and armor, the pictures showing not only the effect of gases on the gun as the projectile left it, but the destructive effect of the meeting of the pro-

jectile and its object, both highly necessary to correct defects in ammunition and armor plate.

As soon as students fitted for educational work were graduated they were placed under the direction of a military man and assigned to duty: News and historical photographers became a part of headquarters companies, army corps, or army headquarters, and, in the United States, were sent, unattached, to designated sections. Camera units were sent direct from Columbia to the piers to take ship for France, Italy, or Siberia. These units consisted of a second lieutenant, who was a motion-picture operator; a first-class sergeant, who did like work, and a first-class private as helper. Forty-four first or second lieutenants were authorized as photographic personnel for divisions, not taking into account men on special duty. The table of organization provided for a lieutenant-colonel, three majors, seven captains, nine first lieutenants, and nine second lieutenants.

The war is over, but not for the photographers. Not until the last act of demobilization has taken place will their work be done—perhaps not even then. When President Wilson sailed for the Peace Conference he took with him a

staff of camera men.

Reconstruction in the devastated countries of Europe, will be so much a part of the military's work that full camera records must be made of it. Every bit of demobilization in this country has its film story, and here, as well, war is merging into reconstruction in so closely related a texture that the line of military demarkation is almost impossible to draw. Until it is drawn the Signal Corps photographers will continue to shoot.

The Marvels of Photography

By C. R. Gibson. Over 30 illustrations. Crown 8vo, \$1.75 net. Philadelphia: J. B. Lippincott Company, publishers.

The romantic story of the discovery of the wonderful art of photography is of interest to a very wide public. Not only the professional photographer, but the amateur—whose name is legion—will find its handling by the author productive of inspiration and enthusiasm.

The steps by which the range of the invention have been extended, until its achievements are such as would have seemed impossible a few years ago, are described in most readable style, and the data collected for reference in the appendix gives the specific information as to inventors, dates, and other matters, so often desired at short notice.

How photography came to be invented, early photographs on silvered plates, instantaneous photography, color photography, the making of book illustrations, the three-color process in printing, photography and the criminal, photographing the invisible, photographing microbes, are among the subjected treats. Some of the most noted scientists of the day have given valuable aid and authoritative information toward producing what is one of the best sumaries and guides to this fascinating subject.

As there is no modern invention which has

As there is no modern invention which has given more pleasure or more valuable results in widely separated fields than photography, the

story of its invention and development, as told by Mr. Gibson, will prove a welcome addition to the select library on photography; those few volumes which every lover of the art wishes to own.

Be An Optimist

NEVER since the beginning of things has there been more need of the sensible optimist—the man who knows that things are coming out right and that the troubles and trials and difficulties of the present are merely the training that will make us strong to stand prosperity.

But there is no room for the cheerful idiot

But there is no room for the cheerful idiot who is willing to sit down and give up trying as soon as things seem to be coming his way. He is worse than an out-and-out pessimist, for the pessimist will work even if it is in a half-hearted way and with terrible doubts as to the

accomplishment of results.

The optimist in the photographic business is needed now and all the time; he it is who cheerfully works out new ways of doing things with the hope of better profits; he is the man who cheerfully takes up new methods of improving his business, and talks of prosperity and success.

The optimist is a benefit in every walk in life, and it is the duty of every man to cultivate the optimistic spirit, to think optimism, to talk optimism, to write optimistic letters to his

friends and customers.

Optimism, however, does not stop with the thought; it carries it into the work, and a true optimist never lets up until victory crowns his efforts as he always knew it would. Then he starts immediately on a new task with the same spirit. Be an optimist. Think, talk, and write optimism. The true optimist is satisfied only with complete success.—Printing Art.

The Wentworth Photographs

At the Corcoran Gallery of Art, Washington, D. C., from March 1 to 15, 1919, an exhibition of pictorial photographs was held, the work of Mr. Bertrand H. Wentworth, of Gardiner, Maine, comprising, almost entirely, new examples obtained at Monhegan during the season of 1918. Without further comment, the fact that this display was under the auspices of the Corcoran authorities is sufficient evidence of the excellence of the exhibits.

Among the number the following may be mentioned as of unusal merit: "A Mixed Company," "The Coming of a Fair Wind," "An Upland Twilight," "The Flocks of the West Wind," "An October Sea," "Evening after Storm," "Snow" (a Salon picture), "Drying the Sails," "Sunlit Spray," "The Mist of an Outwind," "Mighty Music," "Easterly Weather," "Out of the Nor East."

From April 1 to 12, 1919, there will be another.

From April 1 to 12, 1919, there will be another exhibition of Mr. Wentworth's pictures at the gallery of the Society of Arts and Crafts, No. 9 Park Street, Boston, Mass., embracing other photographs; and we would advise any of our subscribers who may be in that vicinity at that time to attend. Mr. Wentworth is a Master

Craftsman of the above society and possesses its bronze medal for excellence of achievement.

The work of this versatile and accomplished pictorialist is sought after throughout the country and is included in the collection of many of our best-known and capable connoisseurs.

Projecting Larger Pictures with the Standard Motion-picture Film

HISTORY is about to repeat itself in the motionpicture industry. From an image measuring
2 by 2½ inches the industry went to a standard
image measuring ½ by 1 inch. For ten years the
standard image persisted. Presently, however,
the size of the image is about to be enlarged in
the case of certain productions; but this time
the standard-sized film stock with its perforations is being retained, so that the original
reasons for adopting it continue to be respected.

The new form of film, as described in Scientific American, moves horizontally instead of vertically, and its images are twice as large as the existing standard, or 1 by 1½ inches. In other words, using present-day film, two separate "frames" or images are merged into one picture, which is accordingly as high as the ordinary image is wide, and twice as wide as the ordinary image is high. The new image gives a picture on the screen of a different proportion than that now shown; it is in the proportion of four to six instead of the three to four of present films. The perforations of the new film are identical to those now in universal use, and all the advantages of standard films, such as tensile strength and the value of standardization in laboratory work, shipping and handling, are retained.

Mechanically, the new process is most interesting. The camera operates in the horizontal plane in contradistinction to the upright position of the conventional type. Standard lenses are employed with all their inherent advantages, such as high speed and great depth of focus.

For projecting the new film an improved type of projector is employed. Obviously, as in the case of the camera, this projector handles the film in the horizontal plane. It is said that a flickerless picture has been attained through simplification of parts on the projector and through the introduction of new members. mechanism for handling the film not only moves the film twice as fast as the present one-footper-second movement, but is claimed to damage the film less than present projectors. As a result the film, although twice as long as the usual film, is less expensive in the final auditing because the positive prints last more than twice as long as the latter. There are a number of other interesting features concerning the mechanical side of the new pictures, but at present these cannot be divulged.

From a director's standpoint the new film is a tremendous step forward in the art. Not only is the new image of more attractive proportions for scenic effects, but, while still keeping the actors the same size as formerly, it is possible to include more of the stage. Thus a scene can be shown in which the actors enter from "off stage," and two sides of a wall or a turn of a corner can be shown in the same picture without sacrificing

detail.

To appreciate fully the advantages of the larger screen picture it is necessary to refer for a moment to the present limited image. Because of the small size of the scene it is generally necessary to make use of what is known as the "cutback," which is the device for representing simultaneous action at different places or when it cannot be included in one scene because of the limitations of the camera. Thus, in the case of a scene under the existing system the "cut-back" is necessary in order to show first the two men waiting for the soldiers, and then the two soldiers coming up the side streetflashing from one scene to the other and back again. True, the entire scene can be included in one picture even with the present film, but this means reducing the size of the figures in order to take in the full action, which, obviously, would make a poor picture. With the new system, however, the "cut-back" is eliminated because the entire scene can be taken in at one time while maintaining photographic standards. Incidentally, this makes for better technic in the photoplay, for at best the "cut-back" is a rather crude device.

The average photoplay is burdened with necessary "cut-backs" which often serve either to confuse the audience or draw out the story until it begins to lose interest. It interferes seriously with the continuity of the theme in many cases; but owing to camera limitations it is forced on motion-picture directors. In the new film the "cut-back" is absolutely unnecessary, and only in instances where its use makes for added suspense or greater force in the photoplay, need it be employed. Indeed, the very fact that this device with its consequent footage is eliminated in the new film, makes for a considerable reduc-

tion in the total length.
In large mob scenes.

In large mob scenes, where hundreds or even thousands of actors appear, the new film has marked advantages. With an area twice that of the ordinary image it is capable of covering more scenery without reducing the size of each character; and as already brought out, because of its greater width, it is better suited to outdoor views. All in all, the new film gives the director a larger stage to work on and a freer hand with his actors, who no longer are limited to a ten-or fifteen-foot stage. On the screen the new pictures instead of appearing as a window through which a production is being viewed, will have the appearance of a stage production as seen from a theater seat.

To produce simultaneously standard and new films of various photoplays is the plan of Mr. W. W. Hodkinson, a film man of New York.

Free Post-graduate Course

To every past student of the Southern School of photography, who entered the Government service, will be given a Free Post-graduate Review by Daddy Lively at some time during the next school term: date not set.

the next school term; date not set.

Come on, boys, and bring your wives, for they will also be included free, and we will have a grand and happy reunion, giving you a thorough brushing up for a new start in photography.

DADDY LIVELY, McMinnville, Tenn.





AMONG THE SOCIETIES



Report of the Convention of the Professional Photographers' Society of New York

MINUTES of the fifteenth Annual Convention of the Professional Photographers' Society of New York, held in the Masonic Temple, Elmira, N. Y.,

February 25, 26 and 27, 1919.

First session opened at 11 A.M., with President Fred T. Loomis, of Elmira, in the chair. First on the program was an address of welcome by Mayor Hoffman. Among other things, he said he had no key to the city to give us, as nothing was locked up in Elmira. A response was made by Al Down Rice, of Jamestown, N. Y.

Motion prevailed that the reading of minutes

of last session be dispensed with.

The following committees were then appointed: Committee on Resolutions. Howard D. Beach, Buffalo; E. B. Core, New York; Chas. Goetz, Rochester.

Committee on Place of Next Meeting. Carl K. Frey, Utica; E. L. Mix, New York City; How-

ard D. Beach, Buffalo.

Committee on Nominations. S. H. Lifshey, Brooklyn; E. B. Core, New York; E. H. Stone, Hamilton. Under new business, Fred E. Abbott, of Little Falls, offered the following resolution: Resolved, That articles 6 of the Constitution, entitled "Meetings," be amended to read, "The city in which the next annual meeting will be held shall be decided on by a vote of the members on the first day of the annual meeting, which shall be held during February when the meeting is held in New York City, and during May when held in any other part of the State.

Interesting remarks were made by E. B. Core, F. E. Abbott, E. L. Mix, Al Down Rice, and J. E. Garabrant, who suggested we have an electrical committee to give proper information concerning

electrical appliances for photographic uses.
On motion of F. E. Abbott, J. E. Garabrant and S. H. Lifshey were made this committee, with headquarters at 124 West Forty-second Street, New York City.

After announcements the session adjourned

until 2 P.M.

Tuesday Afternoon Session

Convention called to order at 2 P.M., President

Loomis in the chair.

Frank V. Chambers requested Mr. Core to pick out the best picture of a man in uniform that he may present the maker with a subscription to

the Bulletin of Photography.

The program began with a demonstration of Portraits by Flashlight, by F. E. Abbott. This proved very interesting and the proofs were shown the next day. This was followed by a talk by Robert McGeorge, of Buffalo, subject: "Art with a Capital A.

Following this, Corporal Arthur Huff, of Long Branch, N. J., explained the exhibit of Government photographs loaned by the Division of Military Aeronautics of the Training Section of the Photographic Branch, headed by Lieut-Col. John S. Sullivan, chief. This proved very interesting and this exhibit was one of the features of the convention.

This was followed by some five-minute talks. Dewitt Allen, of Potsdam, said a Gilbert retoucher saved him one-quarter of the time in retouching; W. G. Mandeville, of Lowville, talked on the doing-up mounts into packages fast as ordered. J. Anthony Bill, of Cincinnati, made some remarks; also Carl Frey, of Utica; J. R. Castanguay, of Ottawa, Canada; J. E. Hale, of Geneva; S. H. Lifshey, Brooklyn; Mr. Thompson; F. V. Chambers, Philadelphia; M. S. Lovell, Oswego; and Mr. Robinson, formerly of the Robinson studio, Ithaca.

At this point an invitation was received from the Arnot Art Gallery inviting the convention to visit the gallery and extending the open hours so

this could be done.

The committee on the awarding of the three gold prizes was changed so as to include the entire

convention.

John N. Heberger, of Rochester, displayed a number of photographs of ordinary sittings in which the subject showed some physical defect. Two photographs of each subject were shownbefore and after. By careful modeling and etching the deformities were removed and the likeness of the sitter preserved. One notable example was of a man with a goiter. His eyes fairly popped out of his head, but Mr. Heberger showed the finished photo in which the eyes looked perfectly normal.

Section Reports

The Metropolitan Section reported thirty-eigh

Nine meetings each year.

Geneva-Ithaca Section. Fourteen members. Four meetings last year; held joint meeting, also picnic, with Southern Tier Section.

Chautauqua Section, ten members. Three meet-

ings last year.

Southern Tier Section: nineteen members. Four meetings last year.

A roll call of sections as to number attending convention, resulted in the Chautauqua Section

receiving the prize for smallest attendance. E. L. Mix, of New York, read a letter concerning the clause in the revenue tax bill taxing phoexplained how Mr. McKenna, a Washington attorney, had personally given of his time and talent to bring about the happy ending and the striking out of this feature, and, upon motion, that this society give Mr. McKenna, as a token of our appreciation, the sum of \$100. Remarks of our appreciation, the sum of \$100. Remarks

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were made by several and an amendment was offered that this matter be tabled and brought before the National Convention. This was lost; also an amendment that the amount be \$50 was finally withdrawn, and the original motion to

give \$100 was carried.
C. L. Lewis and J. A. Bill were appointed judges to select from the exhibit twenty-five pictures to constitute a traveling salon for the benefit of the sections. The twenty-five pictures were chosen from the following exhibitors: F. E. Abbott, Little Falls; Howard D. Beach, Buffalo; Booth-Rusk Studio; L. J. Buckley, Binghamton; W. E. Burnell, Penn Yan; Camp Art Studios, Jamestown; G. L. Drake Waverly; Carl K. Frey, Utica; F. W. Gunnison, Canandaigua; J. E. Hale, Geneva; Dudley Hoyt, New York; L. L. Lubert, Buffalo: S. H. Lifehay, Brooklyn: J. J. Hubert, Buffalo; S. H. Lifshey, Brooklyn; F. A. Loomis, Elmira; Pirie MacDonald, New York; A. McFarlin, Elmira; McLauren Studio; E. L. Mix, New York; J. E. Mock, Rochester; Nelson Studio, Jamestown; G. A. Personius, Elmira; Irving Saunders, Rochester; F. J. Sipprell, Buffalo; May Smith, Binghamton; Stewart Sisters, Canandaigua.

At this session Mr. Mock offered the following resolution: Resolved, That photographers desiring to become members of the Professional Photographers' Society of New York, who live within the boundary of any section of same, shall be required to obtain the signatures of two mem-

bers in good standing in that section.

Mr. Lewis, Mr. Beach and Mr. Abel each said a few words concerning the coming National Convention, stating that it would be held at Cedar Point, Ohio, July 21 to 26.

Adjournment.

At six o'clock a "get-together" luncheon was given on the convention floor, and the excellent facilities and service of those in charge made the occasion one of real pleasure and profit. Good music, lots of singing, and various electrical stunts kept things lively throughout the evening.

After the jokes and songs were exhausted, S. H. Lifshey, of Brooklyn, gave us a demonstration on a home projection motion-picture machine, and showed us six very interesting reels. Three of the reels were Mr. Lifshey's own work and were of subjects taken right in their own homes and gardens; also of the Japanese Commissioners on their visit to New York City. It is needless to say that it was enjoyed and showed the possibilities of the motion picture for the photographer in the future.

Wednesday Morning Session

This session was so full of routine business and the hour got so late that Mr. Buckley was held over for the afternoon; also the rest of the morning's program. Adjournment.

Wednesday Afternoon Session

Convention called to order by President

Loomis at 2 P.M.

This session was given over to L. J. Buckley of Binghamton, who, demonstrating with a model (Mrs. Cossit, assisted by Miss Balch, and using draperies), gave us something new, as his subject

called for using back lightings in various ways. Mr. Buckley's lightings were made with two 1000-watt nitrogen lamps, one placed in a standard reflector and the other on the floor. A black background and a small black movable screen were used in controlling the light.
Next a talk by Pirie MacDonald, who was, as

usual, listened to with pleasure and profit. At this time the past presidents were called upon and several made interesting remarks. Mr.

Mock, using Mr. Frey as a model, demonstrated his new wet process of making sittings.

The ladies, forty in number, were the guests of the Society at a luncheon given at the Woman's Federation Building. This was pronounced a very fine spread and was thoroughly enjoyed by all. The committee in charge arranged for some fine music and Mrs. McFarlin gave some readings in her usual excellent manner.

At 6 P.M. the banquet at the Federation Building was participated in by more than a hundred, and to the sweet strains of the wedding march the procession was led by the clergyman, Al Down Rice; next came the bridal couple, Miss Mary Stewart on the arm of her Lifshey. The bride carried the usual bouquet of lilies of the valley (or something else), her long train was gently supported by the two stalwart gents, Mr. Stone, six feet five index and Calanta Santa Mr. six feet five inches, and Colonel Speck, three feet seven inches. The grand march was finally stopped by Pop Core raising the semiphore (STOP), which was used with much regularity on most of the speakers responding to toasts. The eats were good and all reported a great time. A good orchestra, the fine Masonic Glee Club, all did their parts well, and we broke up at 9.30 to go back to the Convention Hall for the dance.

Thursday Morning Session

Convention called to order at 10 A.M. first on the program was a little talk by F. E. Hewitt, on studio system. This started an open conference, and many ideas were given by those present on how they worked the part-payment-inadvance idea.

At this time reports were called for and the Committee on Resolutions made the following:

WHEREAS, The Chamber of Commerce of Elmira deemed it within their province to house this Convention of the Professional Photographers' Society of New York and in such com-

fortable and pleasant quarters, be it Resolved, That the hearty thanks of the Society are due that honorable body and hereby given,

WHEREAS, Dr. Genthe so aptly aided the Professional Photographers' Society of New York in its educational features through the exhibition of twelve of his beautiful photographs be it

Resolved, That this Society present a vote of thanks to him tendered; and

WHEREAS, The Professional Photographers' Society of New York has been enriched in its convention through the exhibition of photographs by Alexander Pach, Harris & Ewing, and others outside of the Society and not in attendance, be it Resolved, That a vote of thanks shall be ten-

dered them; and



WHEREAS, The press of Elmira has aided the Professional Photographers' Society of New York in advertising and in promulgating a lively interest

in this convention, be it

Resolved, That the thanks of the Society shall
be tendered them, and

WHEREAS, The officers of the Professional Photographers' Society of New York and other members of the Southern Tier Section have, through their efforts, brought about a most successful convention, therefore, be it

Resolved, That a vote of thanks be given them and a copy of this resolution be spead upon the

minutes.

WHEREAS, The Professional Photographers' Society of New York were greatly enlightened in the military branch of photography through the splendid exhibit of Government photographs loaned by the division of military aeronautics of the training section of the photographic branch, headed by Lieut-Col. John S. Sullivan, chief, be it

Resolved, That the thanks of the Society be tendered them and a copy of the resolution be sent Lieut-Col. Sullivan.

HOWARD D. BEACH, E. B. Core, CHAS. GOETZ,

Committee.

Committee on Place reported that the next convention will be held in New York City; time to be at their discretion.

Committee on Nominations made the following: For President: Al Down Rice, Jamestown. For Vice-President: Miss Mary Stewart, Canandaigua.

For Secretary: Geo. H. Personius, Elmira.

For Treasurer: Edwin Park, Oneida.

On motion, unanimously carried, the Secretary was instructed to cast the ballot of the convention for the persons as named; this being done, they were declared elected and all responded with

appropriate remarks.

The resolution, presented at the first session by Mr. Abbott, as to change of time of holding convention when held up State, was discussed at

some length, and seeing the sentiment against a change, Mr. Abbott withdrew his resolution.

Mr. Mock's resolution, relative to persons wishing to join the State Society being required to get the signatures of two members of the

Section in which he resided, was adopted.

Next came the awarding of the \$30, in gold, for the three best devices for helping in the studio.

The prizes were awarded as follows:
First prize: W. E. Burnell, copying frame.
Second prize: Mr. Amsdell, retouching frame and proof envelope.

Third prize: Geo. A. Personius, method of

using a table for photographing babies. Other contestants were Mr. Abbott, lens board and tray. Mr. Mandeville, salesmanship idea.

> F. E. HEWITT, Secretary.

Professional Photographers' Association of Texas

THE Executive Committee met in Dallas, Texas, to decide when and where to hold the next annual convention. It was decided to have it on June 17, 18 and 19, and hold it in Dallas. It is our intention to have speakers of note to be with us at that time and also to have some laboratory expert give us lectures on the use of chemicals. We have raised a fund to pay the expenses of those experts and we are working with good results, too. We have the promise of a large attendance, not only of the old members, but have dues already paid for new ones. We are inviting the Oklahoma photographers to be with us and to have a display that will be called the Oklahoma display. With such men as C. I. Browne, of the firm of Browne & Browne, of Dallas, as our president, and W. D. Orr, of Memphis, as vice-president, there is no reason for a failure, as they are live wires of the liveliest kind. Respectfully yours,
A. L. BLANCHARD,

Secretary-Treasurer.

Middle Atlantic States Convention

As we go to press the big Middle Atlantic States Convention, at Pittsburgh, is about to meet, and a record-breaking attendance is anticiated. A full report will be published in our May number.

Utah Camera Club Exhibit

In line with its policy of seeing the work of the foremost pictorial photographers of the country, the Utah Camera Club is showing an exhibit of carbon prints by Mr. W. H. Porterfield, of Buffalo, N. Y., who is well recognized as one of the foremost pictorial photographers of the country. Mr. Porterfield's exhibit is one of strength and beauty, and comprises many of his pictures that have been hung in the leading salons of the world.

While just in the third year of its activities, the Utah Camera Club is a live organization and is stimulating a lot of interest in pictorial work among its members. It will hold its Third

Annual Exhibit in April.

Line Up

It ain't the guns, nor armament, Nor funds that they can pay, But the close cooperation That makes them win the day.

It ain't the individuals Nor the army as a whole, But the everlastin' team work Of every bloomin' soul.

RUDYARD KIPLING.



The WORKROOM

ONTAINING THE LATEST PROCESSES, FORMULAE AND APPLIANCES NEEDFUL IN THE ART OF PHOTOGRAPHY FOR THE OPERATOR & WORKER

Gum-printing on Bromide
Tank Development Formula for Blue-toned Negatives
Backing-up Transparencies
Enlargements for Finishing
The Best from Underexposure
Some Troubles with Development Papers
The Choice of a Lens Outfit
What Panchromatic Plates Will Do
Hints for Photographers from Motion Pictures
Intensified Toning: A New and Simple Way of Producing
Bartolozzi Red Gum Prints on Bromide
A Pyro Formula for Lantern Slides
Pyro-stained Fingers
A Waterproof Cement
To Remove Varnish from a Negative



THE WORKROOM

By the Head Operator.



Gum-printing on Bromide

In a previous article I have shown that if a bromide print be coated with a suitable colloid, and then treated with a copper toning solution containing potassium bromide, not only is the print toned red, but a facsimile of the image, in copper ferrocyanide, is formed in the colloid coating superposed on the bromide image beneath. If the print is then placed in water at a suitable temperature, it will be found that the portions of colloid which have become impregnated with the copper ferrocyanide are insoluble, and remain attached to the print, while the rest of the colloid dissolves away.

From this it is obvious that if we mix, say, lampblack with the colloid with which we coat the print, we may, after treatment with the copper solution, develop with warm water, and obtain an image in lampblack (mixed with some copper ferrocyanide) superposed on the bromide image, which may be redeveloped underneath.

image, which may be redeveloped underneath. In the result we have a bromide print, intensified by a deposit of lampblack, which is capable, while in the moist condition, of a considerable amount of local control, and possesses a character different from that of an ordinary bromide, approaching, more or less, that of a pigment print, according to the amount of pigment deposited.

The bromide for this process should be preferably matt, since the colloid is apt to become detached in places from glazed surfaces during development. The print must be exposed and developed for full detail in the high-lights, otherwise, after intensification, it will look harsh. On the other hand, a veiled, over-exposed print is unsuitable. The emulsion of the bromide paper must be hard enough to bear immersion in water at a temperature of 100° F. If a hardening bath is used, the alum or other hardening agent must be well washed out, or it will affect the colloid coating.

The colloid which I have found most satisfactory consists of a mixture of 60 minims of gum arabic mucilage containing 15 per cent. of gum, 40 minims of gelatin solution prepared by dissolving 10 grains of culinary sheet gelatin in 2 drams of warm water, and 80 minims of solution of dextrin prepared by heating together 40 grains of white dextrin and 20 grains of sugar with 4 drams of water until the liquid is clear.

The mucilate of gum arabic is prepared by placing 70 grains of gum arabic in small fragments in an ounce bottle filled up with water so that no air space remains, laying the bottle on its side, and turning it over occasionally until the gum is dissolved.

The pigments are mixed with the colloid mixture, which should be not more than a few days old, on a sheet of glass, with the aid of a

thin flexible table knife. For a black print, we may take 1½ grains of vegetable black and 2½ grains of ivory black, mixed, in 3 drams of colloid, or 1½ to 2 grains of vegetable black alone in 3 drams of colloid. Other black pigments are powdered blacklead and lampblack, which may be mixed or used singly.

For a print which is intended to be sulphided, we may use 7½ grains of ivory black alone in 3 drams of colloid, or, for a warmer and more transparent brown, a mixture of 6 or 8 grains of bone brown with 1½ grains of ivory black in 3 drams of colloid.

If the tones obtained on sulphiding are inclined to be purple, which is the case with some bromide papers, it may be necessary to use ivory black with a trace of Indian red. It is essential that the coating should harmonize in color with

the bromide print in the final result.

The print must be dry, and then surface damped just sufficiently to make it lie flat. If too wet, it will absorb the gum, while if the print is dry the mixture will not spread easily. The coating mixture is warmed in a water-bath until it is as thin as office gum, and then spread as thinly and evenly as possible, allowing from ½ to ½ dram for a 7 x 5 print. I use a very soft flat hog-hair brush for spreading, and follow with a badger softener. If the photographer is not the owner of a badger softener, a flat camel-hair may be used instead.

All the shadow detail should show fairly vigorously through the coating; otherwise there is too much pigment present, and the shadows will be flat, particularly if the print is to be sulphide toned. On the other hand, for special effects more pigment may be used and the shadow detail sacrificed, those parts which are required being lightened locally.

The print is then pinned up to dry, and will be ready in about an hour for treatment with the copper solution, which is similar to that given in my previous article, but is used in a more dilute form.

Solution A

Sodium or potassium citrate		
Water	•	2 oz.
Solution B		
Potassium ferricyanide Potassium bromide		4 gr.
Water	•	2 5

For use, 2 drams of A, 2 drams of B and 4 to 8 drams water are taken.

The stronger the solution the heavier and more general is the deposit of pigment, the half-tones (185)

developing with difficulty. The weaker solution permits the half-tones to be cleared easily. Still clearer half-tones are obtained by using twice the

amount of sodium citrate.

The print is placed face upward in a dry dish, and the surface flooded with solution, allowing about 12 drams of the weakest solution for a 7 x 5 print, which quantity should do two prints in succession. We must bear in mind that the print surface must not be touched while in the moist condition. The solution is allowed to act for from one and a half minutes to two minutes: it is then poured off, and the dish filled up with water.

The print is next treated with successive portions of water gradually increasing in warmth, starting at 80° F., which is lukewarm. The increase in temperature must be very gradual, as the print may develop at 80° or less; on the other hand, a temperature of 95° may ultimately be required. The high-lights are the first to clear, followed by the half-tones. A few minutes

suffice for the operation.

Local development can only be attempted with considerable risk at this stage as the image is very delicate; but if a print is spoilt the whole of the gum may be wiped off and the print redeveloped to be used again. The simplest method of local treatment consists of allowing cold water to drop on any part which it is desired to lighten. This is done as the print lies under water in the dish.

It is then necessary, unless the print is to be sulphide toned, to redevelop the slight amount of silver which has been halogenized by the copper Any ordinary developer, preferably free from bromide, may be used. If the print is to be sulphide toned it is not necessary to redevelop, but it is necessary to get rid of the

copper in the print.

The print is first immersed in cold water, and then, in a cold dish, is treated for from one to two minutes with about 2 ounces of water containing 1 grain of caustic soda in the ounce of water. This is poured off, the print is rinsed, and then treated with hydrochloric acid-10 minims of strong acid in 1 ounce of water. It is washed in several changes, and is ready for bleaching and sulphiding in the usual way. The acid discourse the acid solves the copper hydroxide formed by the action of the caustic soda.

I may say that I have tried to replace the caustic soda with carbonate, but without success. The copper, if not eliminated, gives an unpleasant rusty yellow sulphide tone, but if the above directions are carried out the final tone will be exactly as though no copper had been used.

A simpler way of eliminating the copper, applicable only to redeveloped prints, is to treat the print, after the redevelopment, with a solution of potassium cyanide, about 5 grains to the ounce. This, however, is not applicable to sulphidetoned prints, which are reduced by cyanide.

In regard to sulphiding, I may say that all the usual bleaching solutions have been tried with equal success. Naturally, however, one should be careful not to use too strong a solution of sodium sulphide, owing to its softening action.

The print may then be allowed to dry, further local treatment being done with a brush as the pigment sets. If the print, when dry, appears too heavy, it may be further developed with hot water as before. Spotting may be done on the damped, or dry, print with a little of the pigment employed for the coating, thus ensuring an absolute match

Finally, if the bromide original had a glazed surface it will be necessary to polish the final result with a soft rag to bring the character of the surface of the matt coating into harmony with that of the clear lights.—T. H. GREENALL, in Amateur Photographer.

Tank Development Formula for Blue-toned Negatives

THE following pyro-soda formula, based upon the use of a neutral sulphite obtained by the combination of sulphite of soda and sodium bisulphite, gives excellent results:

1 oz. 85 gr. 4 oz. 80 gr. E. K. Co. sulph. of 6 oz. 175 gr. 22 oz. 175 gr. 1½ oz. 51 oz. 2 oz. 7 oz. 5 gr. 18 gr. soda . Sodium bisulph. E. K. Co. car. soda Potassium iodide . 1 gal. Water up to

The following instructions must be strictly followed, as the keeping qualities of this developer depend entirely upon the method of prepara-

tion.

Dissolve the sulphite first, in three quarts of hot but not boiling water. When dissolved, add the bisulphite and then boil the solution for five minutes. Cool to about 70° F. and add the pyro. Dissolve the carbonate in one pint of warm water, then add the iodide. Pour these two solutions into the tank and make up to one gallon with water.

The most satisfactory temperature for developing is 65° F. The solution should not be used below 60°.

When the developer is first made and used, the developing time at 65° F. is about eighteen minutes.

This made-up developing solution may be kept in the developing box, but when not in use it should be covered to prevent evaporation and deterioration. A floating cover of wood, made to fit inside the top of the box, is recommended.

After the developer has been used for several batches of films it will be necessary to strengthen it with the addition of each new batch. strengthening solution is made by dissolving the chemicals named in the following formula and using exactly the same methods for preparing it as when preparing the first developer.

Strengthening Bath Formula

Pvro	1 oz.
Pyro E. K. Co. sulphite of soda	1 oz. and 150 gr.
Sodium bisu'phite	150 gr.
E. K. Co. carbonate of soda	
Potassium iodide	4 gr.
Water up to	60 oz.

Add this strengthener to the developing solution in the tank as needed, to keep up the developing strength of the solution.

Fixing Bath Formula

•	Α			
Water				96 oz.
Нуро				32 oz.
E. K. Co. sulphit	e of	soda	•	2 oz.
	В			
Water				32 oz.
Chrome alum .				2 oz.
Sulphuric acid, c.	p.			₹ oz.

Pour B solution into A solution slowly while

stirring A rapidly.

A fresh bath should be prepared frequently, as the gelatin-coated backs of the films are likely to become stained in an old or discolored fixing solution.

Backing-up Transparencies.

A TRANSPARENCY to be seen properly (says H. T. Oldroyd in Photography and Focus) must be backed up either with ground-glass, opal, or some similar diffuser; and the following method may be worth noting. It is not new, having been used at least forty years ago for stereo-scopic transparencies. It gives a fine opalescent grainless emulsion. A solution of lead acetate is prepared, and sodium carbonate solution is added to it as long as the addition causes any white precipitate to fall; the strength of the solutions is of no importance. On leaving the liquid undisturbed, the lead carbonate settles at the bottom, the clear liquid may be poured away, and the vessel filled with water and shaken up; and, after settling, the water poured away again. After two or three washings like this, the sediment should be drained as dry as possible without loss, well rubbed up in a mortar, and spread out on a piece of glass to dry. When dry it is scraped off and put in the mortar again, and ground into a thin paste with a little methylated spirit. The paste is added to enamel collodion until there is enough to give the necessary opalescence. I find the best way is to take about half an ounce of the carbonate and to mix this up with, say, half an ounce of spirit. A half-pint bottle of collodion is a convenient size to get, and three ounces of this may be well mixed up with the carbonate and then put aside for twenty-four hours. coarse particles will then have subsided, and the upper part is decanted, leaving as little waste as possible, and is diluted with more of the collodion, until it is found to be of the right strength. Poured on a transparency in the usual method which is adopted when one is coating with collodion, it will be found to leave on drying a beautiful white, structureless film. The operations take very little time, but have to be carried out at intervals in order to allow time for the subsidence to take place.

Enlargements for Finishing

LABOR is often wasted in working up enlargements because the enlarged print is too flat and soft to begin with; a print which might be a perfect reproduction of the tones of the original being often quite unsuitable for finishing, especally as

it becomes difficult to preserve the likeness. If we start with a flat print we have to put in both light and shadow, and this not only calls for a much higher degree of skill but necessitates spending four or five times the amount of time which would be necessary with a more "contrasty" image. The following account of an experiment in this direction may be of some assistance to those who produce their own enlargements throughout. The original was a flat carbon bromide print of a three-quarter length figure from a negative about 3 inches by 2 and a 12 by 10 enlargement finished in black and white was required. A same-sized negative was made from this in the usual way using an ordinary plate, and as good an enlargement as was possible to obtain made from it. This proved to be full of detail, but was too even in tone all over to given an effective result. A second enlargement was made, giving a shorter exposure but this, while preserving what high-lights were present in the original, was far too gray in the shadows. Another negative was made using a process plate which was developed as fully as possible, showing a decided improvement upon the ordinary plate. This was intensified with iodide of mercury, followed by amidol, and quite a brilliant image obtained. When enlarged the grain of the original was more evident than in the first result, but there was plenty of light and shade. Working up was done with black lead powder and pumice, the lights being taken out with a pointed rubber, and the final touches given with a black chalk pencil. The finished result was soft yet full of modelling, and such as might have been obtained from a good studio negative. Although in this case the work was done twice over, there was really no more trouble involved in making the successful enlargement than in the failure had the right plan been adopted at once. For the benefit of those who are not accustomed to using process plates, it may be stated that these are quite suitable for ordinary copying, and that contrast is much more readily obtained while they are much more amenable to intensification than are ordinary or extra rapid plates.—British Journal of Photography.

The Best from Underexposure

WE are inclined to think that many operators, when developing plates that are known to have been grossly underexposed through circumstances over which the photographer has not control, give too little time to the operation. Of course, if the negatives are required for press work the method which we describe below is not practicable on account of the long time taken. But in other circumstances, when a few hours do not greatly matter, we can recommend a trial of it. We do not claim, of course, that the procedure is a new one; but as the result of our own experience it is of very considerable value, and either entirely unknown or overlooked by the majority of photographers. Recently we exposed two plates of the non-screen ortho variety upon the same subject at exactly the same time, giving both the same exposure, which by a meter was only about a fifth what it should have been to secure the minimum correct exposure. These two

plates were developed side by side in the same dish, using the time method, and the ordinary pyro-soda formula. When development had apparently come to a standstill one plate was taken out and fixed, while the other was left in the solution after dilution with about six times its own bulk of water. The dish was covered with a sheet of card and put aside for about an hour and a half. The negative was then placed in a dish of plain water covered as before, and left until the next morning, when it was fixed and washed. Those two negatives, when examined side by side, amply justified the procedure. The first plate was weak, lacking in both tonal quality and shadow detail; while the second, though slightly pyro-stained, was of quite good printing quality, nor was there any tendency toward "grain," which would certainly have been the case if development had been unduly forced.—British Journal of Photography.

Some Troubles with Development Papers

The great majority of the Developer Stains. stains seen on bromide or gaslight prints are undoubtedly due to oxidized developer, and they may be caused during development or after it. If caused during development the effect is generally uniform over the whole print, the whites being slightly tinted, while the image is more or less toned to a brown color. An effect such as this may be due to the formula of the developer—that is to say, the developer may be one that is prone to give a colored image, or it may not contain sufficient sulphite. About 5 per cent. of sulphite in the developer is a desirable quantity to prevent stain, but it often happens that less than this is present, owing either to the use of a stale sulphite solution, or to the employment of sulphite of poor quality. Perfectly pure sulphite of full strength is one of the rarest of chemicals, and while a good quality should always be bought, it is always as well to look upon it as being from 10 to 20 per cent. under strength, and to make due allowance for this deficiency when weighing. If the sulphite in the developer is very weak, say, below 1 per cent., the stain may be uneven, taking the form of mottled blotches and spots, but even if the right amount of sulphite be present stain may still be caused by prolonged development. The use of too dilute a developer, or the giving of too little exposure to the print, may cause development to be prolonged beyond the time at which stain appears, and this is a very common cause of trouble with gaslight paper.

Development stains produced after development are due usually to the oxidation (by air) of the developer left in the film. Gaslight prints are especially liable to this form of stain, and, consequently, they should be thrown into the fixer immediately development is finished. A pause to rinse them, or even a plunge into water, will be more likely than not to produce stains. Bromide prints are better rinsed between development and fixing, as they do not in any case stain as rapidly as gaslight prints, but in both cases a properly compounded acid fixing bath is desirable to destroy the developer as

soon as possible. Care must always be taken to immerse the prints right under the fixing bath, and to keep them thus immersed for at least a minute, as any corner that escapes immersion and is exposed to the air will almost certainly show stain. Developer stains caused after development is over are generally brown, irregular, and patchy, covering image and whites alike; they may, therefore, be distinguished from stains caused during development, or by any of the other factor we are about to mention.

Fixing Stains. We have just mentioned that an acid fixing bath is advisable to prevent developer stains, but this bath may produce stains on its own account if improperly made. One of the safest things to add to the hypo solution for the purpose of making an acid bath is potassium metabisulphite, half an ounce to a pint of bath being quite sufficient. Sodium or potassium acid sulphite, or bisulphite, may be employed instead, but in no case should any acid be added to hypo alone. Sodium sulphite should always be added when acid is used; and if no metabisulphite or acid sulphite is available 2 ounces of sulphite should be dissolved in water, and then acid—sulphuric or tartaric for preference—should be added to this until a smell of sulphurous acid is distinctly noticeable, even after thorough mixing. The mixture can then be safely added to a pint of hypo bath. If acid is added without sulphite the hypo will be decomposed, and a certain amount of sulphur toning will take place in the print, the result being that the image may turn brown in patches, while the whites may show yellow stains. Any fixing bath that has the bad-egg odor of sulphuretted hydrogen should at once be rejected as certain to lead to trouble.

Stains may also be caused by imperfect fixing. If the print is not fixed long enough, or if the bath is too old and stale to fix properly, silver salts will be left in the whites, which will afterward become yellowed. This effect is often put down to imperfect washing after fixing, but the more frequent cause is undoubtedly imperfect fixing. Imperfect washing may also lead to trouble, the usual fault being that the prints are allowed to stick together, and are not separated and kept on the move. If due precautions are taken, one to two hours' washing is ample to get rid of all the hypo, and longer washing is to be deprecated, as it tends to rot the paper and to destroy the gelatin. The result of imperfect washing is the appearance of yellow patches some little time after the prints have been finished; often, also, the image shows signs of fading.

Fog. Foggy prints may be due to an unsafe light for development, but this is seldom the case with bromide prints. Gaslight prints are sometimes fogged owing to the worker being too venturesome, and working by ordinary light without any safety screen. While it is quite possible to work by ordinary artificial light, still it is necessary to be cautious when doing

so, and it is far better to use an ordinary dark room lamp with a very light yellow safety screen, this course removing all danger of light fog. Overexposure is the commonest cause of fog, while overdevelopment may also produce it if

the developer contains too much sulphite, or if a very dilute developer is used for a very long time. Exposure is, however, the chief factor to look after, and if it is found that no correction of exposure gives clean results the probability is that the paper is stale. In this case the fog will generally appear around the edges of the print. Gaslight paper will often give foggy prints if exposed when damp, and if dampness is to be suspected in the storing place it is advisable to dry the packets by warming

them before opening.

Blisters. Blisters in prints may be caused by anything that tends to separate the gelatin from its support. Thus rough handling or the friction of one print over another may contribute to the production of blisters, a common cause being the catching of the corner of one print on the film of another. The effect of such treatment is that the elastic gelatin is dragged away from the paper, and so a cavity is left between paper and film. Apparently such cavities are sometimes left in the coating process, possibly owing to air-bells, while it is not at all uncommon for them to exist in the paper itself. They may also be produced chemically by the production of gas within the film. Thus if a print is soaked in a strong solution of sodium carbonate, and is then transferred to an acid bath, carbon dioxide is set free, and the film may be blown up into small bubbles, minute cavities which already exist being greatly enlarged in this way. For this reason strong alkaline and acid baths should never be applied in immediate succession to any print, or even plate; a good wash should always intervene. This, of course, does not apply to the case of alkaline developers and acid fixing baths, the respective solutions being so feebly alkaline and acid that there is no danger of blisters. With prints the blisters are not often produced by gas generation, because the application of alternate strong acid and alka-line baths is unusual. The cavities become expanded by a quite different process, familiar to chemists under the name of osmosis. If a solution of any salt is enclosed in a cell or membrane of any kind through which water can pass freely while the dissolved salt cannot, and the cell is placed in water, then water will pass into the cell and render the solution more dilute. If the cell is elastic it will expand, and if quite closed will probably burst. If, on the other hand, we immerse the expanded cell in a solution that is more concentrated than its own contents, water will pass out of the cell into the solution, and the cell will contract. phenomena can often be observed with blisters. If, for example, a print is taken out of a strong hypo solution and immersed in water, any blisters that may exist will swell greatly, and if the print is then replaced in the hypo, they will contract again. Once, however, they have been formed, the process of expansion forcibly increases the cavities, and the contraction is simply a sinking down of the film, not a closing up of the blisters; the great thing is, therefore, to avoid producing the expansion which makes any existing cavities very much worse than they were before. To this end it should be a rule that no print may be transferred from a

very strong bath to pure water. If a strong bath must be used for any purpose, transfer to a weaker bath for a little time before putting it into water. A salt bath is sometimes recommended after fixing for the purpose of avoiding blisters, but it does not appear that the salt has any special virtues, and a weaker hypo bath will act just as well. Different brands of paper vary greatly in their proneness to blisters, and some, probably owing to less perfect methods of manufacture, are very sensitive. With such papers, strong baths should be avoided, while the washing should not be carried out in very pure water. Rain or soft water is fatal in some cases if a weak intermediate bath has not been used, but when soft water produces blisters hard tap water may be perfectly safe, though it is not always so. High temperature will also encourage blisters, because it not only softens the gelatin, but also increases the osmotic action, and renders it more violent. Thus, if we transfer from a cold hypo bath to a comparatively warm washing water, each blister takes up more water than it would do if the water were colder, and so the expansion or rupture is greater.

Very small blisters will often die down as the print dries and become invisible. Provided the surface of the print is not crinkled or damaged, it is often possible to cure blisters when mounting by soaking the back of the print with a thin mountant, and allowing the drying to take place under heavy pressure. A fine prick with a needle will sometimes allow a fairly large blister to lie down quite flat, and then the mounting and pressure process will practically cure it. This method is, however, only effective when the blisters are in the body of the paper, as they very often are, and quite useless when they are

between paper and gelatin.

Fading the Prints. Bromide and gaslight prints are much less liable to fade than P. O. P., and when they do fade the cause is generally either imperfect washing or the use of impure mounts containing hypo. Mounts should be tested by squeegeeing wet prints face down on them and leaving for a week or two. If the print survives there cannot be much wrong with the mount. It is of great importance to avoid cheap mounts, and to buy only trustworthy makes, as prints that fade some little time after they have been out of their producer's hands are anything but a good advertisement. Dry-mounting with shellac tissues is a good safeguard, for it prevents any interaction between print and mount. Damp is very conducive to chemical action, and so it is an excellent plan to varnish bromide and gaslight prints with celluloid or "Japon" varnish, which gives them a waterproof coating, but without any gloss. Prints toned with uranium or copper should always be varnished, as they are fairly certain to deteriorate in time if unprotected. Apart from impurities in the mount, hypo may also exist in the paper of the print, owing to imper-fect washing. We have already referred to the question of washing, and it is only necessary to add here a caution with regard to washing the print both front and back. It is not sufficient to look after the gelatin side only. The paper contains the greater part of the hypo, and free access of water to the back of the print is most essential. It should also be pointed out that the action of a slight trace of hypo in either print or mount may be greatly accelerated by the use of an acid mountant. Commercial pastes not specially prepared for photographic use are generally acid, and should never be used for mounting purposes.—British Journal of Photography.

The Choice of a Lens Outfit

The most serious question to be dealt with when fitting out a new studio, or extending the capabilities of an existing one, is the selection of the necessary lenses. One thing is certain, whatever lenses are selected, there will soon come a job which will make the photographer wish that he had chosen others, unless his outfit is planned on unusually generous lines. The object to be aimed at is the acquirement of a set of lenses which will meet most of the necessities of professional work, leaving special jobs to be dealt with as they present themselves. Owing to the protean qualities of most modern anastigmats, it is much easier to plan out the lens kit than it was when portrait lenses and rapid and wide-angle rectilinears, all limited in their applications, were the only available instruments.

The character of the business must, of course, largely influence the choice of lenses, and it is better to be well equipped for certain sizes and classes of work, rather than to attempt to effect a compromise with the intention of doing everything and finding that there is really suitable

equipment for nothing.

In the majority of studios there is now little or no demand for direct work above 12 x 10 inches. In a few instances 15 x 12 pictures are regularly made, but the demand for these tends to decrease, customers preferring a larger num-ber of the smaller size. Therefore, in most cases, we may consider that a lens capable of making a 12 x 10 head and bust portrait at a reasonable distance is the largest which will be required. Nineteen or twenty inches will be a suitable focal length, and the aperture should not be smaller than f/6. As examples of this size of lens we may take the Dallmeyer 4A, f/4, 18-inch; 5D, f/6, 19-inch; or the Ross No. 5 Universal Symmetrical, f/5.6, 20-inch. Of course, any of the modern anastigmats of suitable focal length and aperture will answer well, but it is questionable whether for portraiture the extra cost is warranted, as they have no greater depth of field than the lenses already mentioned, and their great covering power cannot be fully utilized.

The question of a lens for cabinets must now be considered. Here the available working length of the studio is an important factor in making a choice. Full-length portraits are again coming into fashion, and it is necessary that a lens neither so long in focus that it is difficult to get an image small enough for the plate, nor so short that violent perspective is produced, should be employed. In a studio of medium length (say 25 feet), about 11 to 13 inches will be convenient focal length; in a

shorter studio (say 20 feet) a 10-inch lens would be more suitable; while for still more confined spaces an 8½-inch lens must be used, although in such a case some accuracy of drawing must of necessity be sacrificed. For large cabinet heads the 12 x 10 lens should be used, as with even a 2½-inch head the distance between lens and sitter will then only be 8 feet, as near as it is desirable to go. It is desirable to have a short-focus lens, say 6 to 8 inches, for full-length cartes, locket pictures, or midgets. These little pictures must be brilliant, and if there is 20 feet of illuminated atmosphere between lens and sitter the results are necessarily flat, especially when using artificial light in dull weather. This lens may be of the anastigmatic type, so that it will serve for outdoor work as well; in most cases such a lens will answer well for wide-angle pictures on whole plates.

If the lenses already mentioned are stopped down to a moderate extent, they may be used for groups in the studio, but they will sometimes be found not to embrace of sufficiently wide angle, and in such cases one of the outdoor lenses must be pressed into the service. A rapid rectilinear of 16 inches focal length will be found useful for 12 x 10 groups, and one of 8½ to 9 inches for cabinets. Anastigmats of the same focal lengths are, of course, preferable, if cost is not the primary consideration. For the outdoor equipment of a business of the class we have been considering a number of lenses is desirable, if not absolutely necessary, and these should, if possible, be anastigmats, at all events in the smaller sizes. Assuming that 12 x 10 whole- and half-plate work has to be undertaken, lenses ranging from 16 to 4½ inches will be required. If the selection comprises lenses of 16, 11½, 8½, 6 and 4½ inches we shall have a good range of angles in each of the sizes, and this will be increased if the lenses are of the "Satz," or convertible, type, which permits the free combination of the single lenses to give intermediate focal lengths, besides using the single lenses independently, very often a differ-ence of a single inch in focal length will make the difference between a well-arranged subject and a cramped one.

In cases where economy has to be studied, it is perhaps advisable to eschew portrait lenses altogether, and to provide for studio work instruments that are equally adapted for outdoor use. Almost any of the anastigmats will answer, but in view of their employment for portraiture, it is desirable that the full aperture should not be smaller than f/6. The Ross Homocentric f/5.6 and the Dallmeyer Stigmatic Series II. f/6 are good types, but there are many others equally suitable, notably those of Zeiss, Goerz, and Wollensak. Working on these lenses, the portrait lenses previously recommended may be replaced by 18 x 10½ inch anastigmats, the outfit being completed with other sizes of the same series.—British Journal of Photography.

What Panchromatic Plates Will Do

It has taken many years to educate the steadygoing studio photographer to the use of colorsensitive or "ortho" plates even for copies and



special subjects, and in many studios they are still unknown. Hence it is not surprising that the panchromatic plate, with all its advantages, has penetrated into few establishments, these being mainly process and commercial houses. It is true that panchromatics cost more than do ordinary plates, but even when they cost less than half what the latter do now, photographers looked askance at them—why, we cannot tell, nor do

we suppose can they.

There are a few misconceptions regarding these very valuable plates which we will try to remove. In the first place, there is an idea that panchromatic plates are suitable only for special subjects, and that they are not available for use without a yellow filter. This is quite wrong. There is nothing that can be done with an ordinary plate that cannot be better done with a panchromatic, and although a filter is necessary if perfect color rendering is required they are better than the ordinary ones even if used without it for any subject into which color enters. Recently we had occasion to notice that one of these plates gave as good a color rendering without a filter as one of the older orthochromatic plates gave with one. Nevertheless, we strongly advocate the use of a filter even if it be only an assculine one, which cuts out the ultra-violet rays but does not appreciably increase the exposure. Respecting this screen, which is not supposed to be durable, we may say that a week ago we tested a gelatin film screen of this kind which had retained its properties for nearly seven years. Therefore, there is no need to be troubled with a liqud screen, which many people object to.

The second misconception is that some disadvantage is attached to the fact that panchromatic plates require handling in perfect darkness. There is really nothing in this. With ordinary care even unbacked plates can be filled into the slides and placed in the developer without danger of using the wrong side, while if they are backed it is next to impossible to make a mistake. The old idea that it is necessary to watch the development of a plate should be quite exploded now, and it is quite unnecessary to keep the dark room without even a red light if the plates are developed in a covered tank, or if the dish is placed in a light-tight box which can be rocked for the few minutes necessary for development. We have developed some thousands of plates in this way, and can assure our readers that the quality of the negatives was as even as if they had been developed in a good

non-actinic light of the usual kind.

Another mistake is to think that panchromatic plates rapidly deteriorate by keeping; this we have not found to be the case. We have used them of various ages up to four years, at the end of which time they have slightly darkened round the edges, but not more than some process plates which had been stored with them, while the color-sensitiveness had decreased but little.

As to their everyday application, we would point out that certain subjects, such as old dark oil paintings, most dark woods, and many other deeply-colored objects, can only be successfully rendered by them, while with many other objects which do not appear to the eye to require any

special treatment the difference in the results obtained against ordinary and even ortho plates

must be seen to be believed.

For portraiture they are admirable, and we believe that no operator who relies upon the lens rather than upon the retouching pencil would ever use an ordinary plate after a fair trial. Used with a K 2 or even a K 1 screen the images appear as smooth as if highly retouched, of course leaving the question of lighting and facial irregularities out of the question. Deep yellow or red hair gets its true visual value and does not appear black, but full of detail, while freckles disappear and sallow complexions do not appear heavy and dirty. Freckles are, of course, obliterated, and there is a general softness of definition, due to the fact that the little red bloodvessels just under the skin are not rendered as dark spots, which give a rough texture on even an orthochromatic film.

For landscape work the newer kinds render the greens perfectly, and there is none of the hard contrasts we are accustomed to see with ordinary plates. Clouds, if present, can be secured of such density that they print without dodging, and with a suitable screen, foreground and distance will be in harmonious relation to each

other

It is hardly necessary to point out to scientific workers that for all microscopical work, stained preparations, anatomical subjects, and nearly every other class of work they are indispensable, while for industrial work they are equally useful. Furniture, machinery, colored diagrams, all call for a plate giving true color values; while for the three-color worker, either in carbon, dyed gelatin, or etched plates, no other kind is possible. As an example of their powers, we were told that a technical photographer was recently called upon to dissect some elaborate color diagrams in which certain movements were shown on the one sheet in colored graphic curves upon black ruled squares. With the aid of the panchromatic plate and suitable contrast screens each color was isolated so that it could be shown as a separate diagram, the black lines being, of course, common

to all.

We hope that our remarks may lead those who feel that there is a possibility of improving their work to give these plates a trial, and we wish to say that we are alluding to no one make. We have worked with all makes, including some of our own preparation, and though differing in details have found all far superior to other plates even if yellow-sensitive.—British Journal of Photography.

Hints for Photographers from Motion Pictures

THE ordinary portrait or commercial photographer might very profitably pay more attention to the various technical hints deducible from motion films. Many valuable lessons may be learned in this way, and applied at leisure to his own particular work.

What first strikes one when viewing film pictures on the screen is their superb definition, after such an enormous degree of enlargement. The ratio is approximately nine times as great as an announcement or title lantern slide projected

to the same size, yet in how many cases is the latter noticed to be inferior in definition to the motion film. This fact is the more remarkable when it is remembered that the positive cinematograph film is printed by contact from the negative, the two being run rapidly past an exposure aperture, usually with intermittent stoppages, while the lantern slides are, sometimes at least, made by reduction. It speaks volumes for the delicate precision and exactitude of the cinema printer mechanism, and for the patient care bestowed on every stage of the work. Would that the same standard of rigidity and accuracy obtained in ordinary photographic apparatus, and that all camera craftsmen were as free from slipshod ways!

The reasons for the generally better definition

of cinema films as compared with lantern slides will repay inquiry. Undoubtedly the chief is the very short focus of the taking lens used on the motion-picture camera, generally between 2 inches and 3 inches. Not only does the shorter focus mean far greter depth of definition, but it is often overlooked that the latter is also equivalent to a smaller circle of least confusion. The same moral is constantly being discovered by owners of vestpocket cameras-namely, that the tiny negative made with a good-class lens of short focus will actually enlarge further and give better results than a bigger negative obtained in a larger camera with a relatively long-focus lens.

Yet another point is that the lantern slide, as often as not, is made from a negative secured with a rapid rectilinear lens, while the cinematograph taking lens is almost always an anastigmat. It has of late been confidently affirmed by some workers that one lens will, in practice, equal the peformance of the other. To such a comparative test, by making transparencies and projecting to a fair size on the screen, is recommended as a clear proof to the contrary. To be strictly just, it must be remembered that the cinema projection objective is usually of a higher grade than that employed for showing lantern slides; but, given good focussing, this should not much affect the comparison.

A further fact which will bear pondering over is the excellent perspective and absence of what is conveniently, but incorrectly, called distortion in the majority of cinema films. Studio photographers are apt to grumble when condemned to use a lens of, say, from 4 inches to 6 inches focus in a small space; yet the cinematographer gets admirable portraits with still shorter foci. explanation, of course, is the much smaller picture, for even with a 2-inch lens the focus is nearly twice the diagonal of the film image. Here is a self-evident and serviceable hint for the man who cannot obtain a decent size studio—to use a very short-focus lens, take only small negatives and enlarge from them instead of printing by contact. Indeed, one might do worse than actually employ a motion-picture camera for the purpose

Then, from the art side, observe the admirable grouping, the unconscious and telling ease of pose, the effective handling of background and accessories in first-rate cinematograph pictures. Has not the average portrait photographer much to learn in these directions from his confrère of the "movies?" At first sight it would be difficult to tell whether the results are obtained by day or artificial light, which is a high tribute, for both are probably used to about an equal extent. The film producer's ideas of electric lighting are on a much more sumptuous scale than would be possible in most portrait studios. Usually numbers of arc lamps or frames of mercury-vapor lamps, sometimes both, are swung high overhead, direct light being screened from the subject, and inclined white reflectors, also elevated, used for the actual lighting. A smaller number of sub-sidiary lamps are often arranged lower down, to soften the shadows. Sometimes the reflectors are dispensed with, and the lamps furnished with muslin diffusing screens. The main points to be noticed, as contrasted with the average portrait photographer's ideal of a concentrated and comparatively low light, are the number of the lamps and the space over which they are spread, their height, and the care taken to ensure diffusion.

For those who can get the opportunity, a visit to the studio of a large film producer is strongly advised. It is sure to give a broadened outlook, even if some of its methods are not considered altogether applicable to the different problem and conditions of portraiture.—A. LOCKETT in British Journal of Photography.

Intensified Toning: A New and Simple Way of Producing Bartolozzi Red Gum Prints on Bromide

In toning bromide prints with copper in the usual way, there is no intensification, and the change of color, if the toning is carried to its full extent, is apt to make the print look disappointingly weak. If, however, we add to the toning solution a little soluble bromide, we get not only exactly the same formation of red copper ferrocyanide which causes the toning, but, in addition, there is formed beneath it a developable image consisting probably of silver and copper bromides and therefore, by redeveloping the print with a suitable developer, we are able to repeat the toning, and so get more than double the vigor in the final result than we could get from the same print by toning in the ordinary way

But, to obtain full advantage of this process—indeed, to work it satisfactorily in any case—it is necessary that the bromide print be first coated with some colloid, such as dextrin or gelatin, to fix and retain the toned image, which is formed so close to the surface that otherwise it would actually be thrown off as a red powder, which can sometimes be seen floating over the print in the

The idea of using a colloid coating occurred to me in making some experiments with prints which had been rubbed over with a solution of dextrine for the purpose of working up. They were spoilt prints kept for any kind of experi-mental purposes. The dextrin, being soft in the wet condition, came off when the print was touched with the finger, and this disclosed the fact that the toning had taken place only partly in the print, and more in the dextrin coating, I have made my first gum print in copper ferro cyanide superimposed on a bromide base.

I have repeated this with unvarying success, though the amount of the copper compound

which comes to the surface naturally varies according to the depth of printing in the original bromide. It is probable also that with a print developed with unrestrained metol, more image will be formed in the gum, relatively to the total amount of silver, than if the print had been developed, say, with restrained quinol, and the silver image was more deeply embedded in the bromide print. Further, a glossy paper which is already provided with a thick gelatin film will, theoretically, be less likely to throw off the toned image than would be the case with a paper which is coated with a minimum of gelatin.

To come now to details. The colloid should

To come now to details. The colloid should be one which will set firm enough at normal temperature to withstand the various solutions, and yet it should be soft enough, while in the moist condition, to be remoavble with a brush if we wish to work on the print in the manner of a gum print. For the present time of year the following

is suitable:

Colloid Coating. Soak 20 grains of culinary sheet gelatin in 1 ounce of water, and dissolve it by the heat of a water-bath. Dissolve 80 grains of white dextrin and 40 grains of white sugar in 1 ounce of water in a saucepan. Heat until the liquid is clear. Do not prolong the heat, nor overheat either liquid. Mix the two solutions. When cold, the mixture is a soft jelly which melts to the consistence of office gum when warmed. It will not, of course, keep indefinitely without the addition of some preservative, such as methyl salicylate.

Coating the Print. If the prints are flat, they may be coated dry; but it is usually necessary to damp them, and, after blotting off all water, to coat them damp. About half a teaspoonful of the gum may be reckoned to cover a 7 x 5 print, but the coating should be thicker for prints with heavy shadows. A little pool of gum should be poured on the print and spread with a flat camelhair or very soft hog-hair brush, a useful size of brush being about 3 inches wide. If the brush is soft, no badger softener is necessary. The print is then pinned up to dry, which may take half an hour, when it is ready for toning.

Toning and Intensifying. The solution may be most conveniently kept in two stock bottles, viz.:

Solution A, consisting of 20 grains of copper

sulphate and 80 grains of sodium or potassium citrate (neutral) dissolved in 5 ounces of water.

Solution B, containing 40 grains of potassium ferricyanide (red prussiate) and 20 grains of potassium or sodium bromide dissolved in 5 ounces of water. Sodium citrate may be prepared by neutralizing 80 grains of citric acid with 96 grains of sodium bicarbonate and boiling off the carbonic acid gas.

The working solution consists of equal parts of A and B, and should be quite clear, and of a bright green color. About one ounce is ample for a 7 x 5 print.

The dry print is placed in a dish and flooded with the solution. Do not turn the print over, but lift it from time to time in case the heavy shadows refuse to tone, and lay it down so that the solution may get underneath the print. The most suitable prints for red toning are delicate without being weak-bright high-key prints, fully developed, but without any very deep shadows.

Overdeveloped prints from contrasty negatives are unsuitable. When toning is complete, which will be in from two to twelve minutes, according to the character of the print, the color will be pure red, and the print may look sufficiently strong, but if we fix it at that stage the removal of the opaque bromides which form the underlying image will cause considerable reduction.

Redevelopment. In order to get a stronger final result, therefore, after thoroughly washing the print, we redevelop it with a little amidol dissolved in sodium sulphite solution rendered neutral or slightly acid by the addition, if necessary, of a few drops of solution of metabisulphite. An alkaline developer cannot be employed.

When redevelopment is complete, the print is uniformly purple or warm black, and is very greatly intensified. If the color is liked, the print may be rendered more purple and reduced to the correct density without touching the fine detail, in a reducer composed of ferricyanide and bromide, which must be followed by an acid hypo bath to destroy the products of reduction. This reducer does not touch the toned image. Other reducers such as permanganate and bi-

chromate do so, and are unsuitable.

Retoning. If the original was a very strong bromide, the first toning may suffice, and all that will be necessary is to fix the print; but from a normal bromide it is much better to redevelop as described above, and then repeat the toning. The print, however, must be washed free from the developer before retoning, or it will become stained pink. When all the black has disappeared and the print is a pure red, it is transferred to an acid fixing bath which has not previously been used for fixing negatives and prints. Finally, should the high-lights and margins be stained pink, which is quite probable, the print may be given a short immersion in weak sodium sulphide solution, or in an alkaline sulphide. This changes the pink stain to yellow, and would in time, or if used strong enough, turn the whole image yellow. The yellow tint may then be got rid of by immersing the print in a solution containing about half a grain to the ounce of potassium cyanide. The action of this must be watched carefully, as it not only removes the yellow stain, but is also a reducer of the image. The sulphide does not reduce the detail, but simply turns the color yellow. On the other hand, cyanide is a solvent of the image, and if strong enough will remove it entirely.

Sulphiding the Bromide. After the first toning, if the red image is not already vigorous enough, we may, as an alternative to redevelopment and further toning with copper, sulphide the underlying image. This, however, leads to considerable intensification. It is not possible to use alkaline sulphides, as these turn the copper ferrocyanide yellow; but we may employ saturated solution of sulphuretted hydrogen, or dilute solution of hydrochloric acid shaken up in a bottle with a little barium sulphide. The toning must be done out of doors or under a flue with good draught, as the gas given off is highly objectionable and injurious.

If the result is too purple in tone to be pleasing, a final bath of alkaline sulphide, e. g., sodium sulphide, will turn the purple yellow without reducing the image; while if the print requires brightening up, or general reduction, a solution of potassium cyanide, 3 to 4 grains in 1 ounce of water, will reduce it. The processes of redevelopment and of sulphiding under the copper ferrocyanide image are particularly applicable to weak bromide prints which would not yield good

sulphide tones direct.

Working on the Print. The dextrin and gelatin coating lends itself admirably to work with camel-hair brush or sable while the print is damp. If the print has been dried, it may be rewetted and worked on with equal facility, as there is no bichromate sensitive to light to harden the gelatin. It is also remarkably well adapted for spotting with water color. Personally, however, if there are any deep shadows to remove, I should undoubtedly prefer to remove them on the bromide by means of the iodine spirit reducer before commencing the other operations.

Finally, the print will require either varnishing or coating with a clear gum, or perhaps simply polishing with a waxed cloth will suffice; but much will depend on the character of the surface of the original bromide, whether rough or smooth, matt or semi-glossy.—F. H. GREENALL

in Photography.

A Pyro Formula for Lantern Slides

THE following formula, culled from an old lantern-slide expert's notebook, may prove of interest and service to other slide makers, especially to those with whom pyro finds favor above all other developing agents:

 Pyro
 10 gr.

 Potassium bromide
 10 gr.

 Ammonia 880
 10 min.

 Water
 10 oz.

 —Photography.

Pyro-stained Fingers

The difficulty of obtaining, and the enhanced cost, of some of the foreign-made developing agents has had the effect of still further popularizing pyro as a developer, with the natural result of frequent staining of the finger skin and nails. Prevention being perferable to cure deserves first attention. If the skin surface is well rubbed with a water-repelling inert substance the chances of staining are vastly reduced. Such preparations as vaseline cream, lanoline, or ordinary cold cream are suitable. These are to be well rubbed into the skin for a few minutes, giving especial attention to the edges of the nails, and then any surplus wiped off. Next come stain restrainers in the developer itself. Of these soda sulphite, potassium metabisulphite, or soda bisulphite deserve special consideration. The

mixed developer should not contain less than 20 gr. and preferably 25 gr. of sulphite per ounce, and the others in equivalent proportion. If the normal developer is diluted for any special reason, this should be done with water containing at least 20 gr. of sulphite per ounce. Whenever the fingers are dabbled in any staining solution they should be well and frequently dried on a rough towel. As stain removers the following deserve special attention: (1) Rubbing the part with a slice of a lemon or with citric or tartarc acid; (2) dipping the fingers alternately in a solution of chloride of lime and a 1 per cent. solution of hydrochloric acie; (3) applying a weak solution of iodine, followed by weak ammonia or hypo solution; (4) an acidified solution of potassium permanganate, followed by acid hypo fixing bath, a solution of metabisulphite, or acidified sulphite; (5) a strong solution of ammonium persulphate; (6) rubbing the stains with wet table salt has also been advocated.—Amateur Photographer.

A Waterproof Cement

THE most useful cement a photographer can have for joining glass to metal, repairing dishes, and for the thousand and one general purposes the use and abuse of apparatus render necessary, is the old Faraday cement. This is composed of four parts of beeswax, one part of resin, and one part of Venetian red (previously dried). These should be melted together carefully in an old saucepan or "skillet," and well stirred while cooling, remelted, and stirred as before. This is to ensure thorough mixing. For use it is melted and it is advisable, though not absolutely necessary, to heat the articles to be cemented. Faraday cement is as handy as sealing wax, which it resembles, but is much more tenacious, and though hard, possesses great elasticity, so that it stands wear and tear well.—A mateur Photographer.

To Remove Varnish from a Negative

An easy and safe method of removing varnish is to place it in a bath of methylates spitis, to which has been added a few minims of ammonia. After the negative has soaked in this for from five to ten minutes it should be transferred to a weak solution of ammonia and water, and then finally washed in clear running water. The work will be greatly facilitated if the negative is gently rubber over with a small wad of cottonwool at each stage. It is advisable to work the above-mentioned baths in porcelain or vulcanite dishes—not in celluloid ones.—Amateur Photographer.

The Photographic Journal of America

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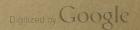
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CONCERNING TONE

By "PROFESSIONAL"

TPON looking over my article on tone, in the January issue of this MAGAZINE, it has occurred to me that more might be said as to the method of lighting to be employed in obtaining "tone."

It is by no means imperative that the subject be placed at apparently great distances from the light for obtaining tonal qualities, nor for the luminosity of color values in our monochrone work. All this is possible when the subject is very near the light.

When working in a room without diffusing curtains, where only opaque ones are employed as is the custom with many of our leading men, it becomes necessary to get considerably away and from under the light, to prevent undue accents.

When the skylight is provided with clean and white curtains (not dusty and yellowish white), work can be made much nearer the light. If the dark curtains are pulled down directly overhead, the chair can be placed under the skylight, if the white head screen is turned

at such an angle that it will be interposed between the light and the sitter. This will tone down the light considerably on account of its close proximity to the subject. This, to some, may appear to produce extremely flat results, but if the curtains and the cheese-cloth head screen are clean, the light will be pure, only much softened. It is very obvious, however, that the use of a reflector (even of a medium plain ground) is rendered less necessary under such conditions.

With the lighting thus arranged, a side screen with an adjustable and extended arm may be interposed to tone down the ear nearest the light. It may be covered with colored cheese-cloth, loosely thrown over to produce any desired effect. Very fine results are thus easily obtainable. A "low-tone" effect will be produced with the isolated white of the ear thrown back in its proper position in drawing, or perspective. The drapery and clothing modified by the draped extended arm of the side-screen, will also be in their proper position in (195)

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attractiveness. Tonality is thus obtained, and the key of tone produced may be medium, low, or very low, dependent upon the nearness of the subject to the screened skylight, and the location of the interposed white head screen, used to tone down the light that falls upon the head and figure.

Pictures made in this way have certain advantages over those made at considerable distance from the light, as there seems to be more solidity to the

portrait.

The writer thinks it is conceded that more solid effects are produced nearer the light than at a great distance away. There certainly should be a feeling of actual substance in the human figure. This should always be remembered when making pictures. There is danger, however, in getting too near the light, as well as going to the other extreme.

Too much stress cannot be given to the importance of having the light as pure in quality as possible. Cut down the power of its direct rays. Be careful there is sufficient of it for required illumination, but do not use dust-covered, and discolored screens or curtains. These would render the light weak and dead

in quality.

Soften it, but have it as pure as you can make it. This gives substance to the resultant negative. These low-toned effects then will be found to need only a few seconds' exposure with open lenses, to be *fully timed*. Free exposure should always be given if you wish to produce in the negative that which you have taken pains to arrange in your composition.

There are various methods employed for the production of low-toned work, especially by the strictly pictorial workers. But it seems to the writer that the professional should work along lines that will produce these results with a minimum

of exposure.

One of our most highly esteemed and successful local pictorialists, with an international reputation, who most unfortunately has recently lost, by fire, his entire collection of negatives and prints, often placed his sitters, if I remember him correctly, some thirty or more feet

away from a comparatively small window in the slant roof, and where he was obliged to give about a minute's exposure. It may be added that the selection of this shade and the use of this special light were for a definite purpose in his method of work. He also used other windows nearer at hand, not confining himself to the one on the roof.

With those subjects who kept fairly still his results were decidedly pleasing. His methods of work embodied a wide range of pictorial principles which were always a pleasure to see, yet the writer is aware that there are many others of this extreme school of pictorialists who plan to produce work with shorter exposures.

Textures

The ability of the artist of the brush to produce textures largely determines his standing as a painter, and although he may be eminently successful in this sense, it by no means follows that he has even fair ability as an artist of the grand class. He may be simply excellent in his technic as a painter in just the same way as is the better class of photographers who work solely in the old school methods. They may likewise be excellent in technic which is purely photographic, yet devoid of any artistic qualities, with which is identified the more modern movement in photography.

The photographer, like the painter, may try to put aside his technic in his efforts toward the acquirement of the more worthy and higher standard of his art, but the ability to do so depends much upon his temperament. Late in life this is seldom done. This, however, should not be the case, for it is at this age that his work is liable to be passed by. He should get into the procession, and march with the youngsters. With the aid of his riper judgment, he would likely avoid some pitfalls into which his younger and more energetic brother might fall, thus equalizing matters somewhat on the way. Texture is the reproduction in pictures of a likeness pictorially of those things painted, or in our case photographed.

Surface Textures

With artists, texture painting seems to be indissolubly linked with surfaces and brush work, on the theory that woolen fabrics, rugs, etc., by their powers of absorption or reflection of light, take on a textural appearance that calls for attention to surfaces and brush work, different from that produced by silks, cotton, or polished wood, etc.

In photography, a great deal of this is rendered unnecessary, even to those desirous of following the painters' work in its fullest details. Pictorially, these things are easily recognized in our product as resembling the original subjects, be they hard, soft, smooth or rough, regardless of what the surface of our medium of expression may be.

We photograph the silk, cotton, cloth, polished wood, and the rug all on the same surface of paper, and can very easily reproduce their pictorial appearance. The painter interprets a mirror, mantel, polished wood, etc., with a different surface from that he does for a rug.

We can reproduce the face, hat, coat, shoes, and furniture, so there will be no mistake in recognizing them, whatever the medium used, providing it is right in the negative.

To the use of surface texture in painting is doubtless due the introduction of gum-bichromate printing in photography. The successful gum worker, by his handling, has given a distinctive individuality to his work which is very pleasing. This is practically the only process of brush and surface work that photographers have extensively practiced, and is in use only by a limited number. The glycerine-platinum development is not practiced in this sense, but only for individual effects pictorially, and entirely separate from surface texture.

Whether we employ carbon transfers or special platinum coating makes no difference; for whatever the surface may be, the result is the same.

Following the painter, therefore, in attention to surface texture, in the practice of photography, is a matter that need not concern us. The question resolves itself into the selection of the best

uniform surface whether it be polished, matt, smooth or rough.

Textures Pictorially

With the textures of the surface eliminated, our relation to "texture" pictorially reproduced in the negative, so that it will in the print be a faithful likeness of the subject photographed, is what is to be considered.

Since the lens is so prone to reproduce every speck or spot so faithfully and indeed slavishly, the question naturally arises, "Can this tendency be overcome when desired?" Certainly it can.

An Example

I cannot better answer this, than to refer to an incident that occurred at my studio this morning.

I received a visit from a very bright, clever, young pictorial worker, who was advised by one of my New York friends to call upon me with his samples. He desired to secure a position where pictorial work was the essential requirement.

One of his two best pieces was a working man, wearing a soft, dark felt hat and working clothes. The felt hat shaded his eyes, but the shadow was luminous and the texture of his forehead and face was well rendered. So were his clothes. The lighting, as a whole, was excellent, likewise color; tonality, on the whole, was good, except in one spot which presented unity, and this was the point of the nose, which being too highly accented had thrown it out of tone. The picture was made on a medium dark ground, and by reducing the edges of the plate, he had much improved what would otherwise have been a monotonous background. He had given variety by reducing the corners of the plate and by throwing the center of interest to the face to which contrast has been added by the shadow of the hat.

The light on the nose, which by being forward had naturally here received an excess of light, still further assisted in the concentration. This was unfortunate, and injured the picture.

There were one or two minor things, rather unimportant, that might have

been improved upon, yet, on the whole, it was very pleasing and exceedingly creditable.

I had commented rather unfavorably, upon the symmetrical appearance of a section of the shadow on the ground near the hat. This was procured by "faking," and made the hat itself too prominent at its darkest point, against this light place in the ground. I suggested that the reducing should be done there a little also.

I then asked him what my friend had said about the picture, and was informed that some of the points I had criticized had been remarked upon by him also, but that he had dwelt more especially upon the texture of the hat as being the same as the shadow side of the face, and that the shadow could as well be the hat, or vice versa, in as far as they represented the likeness of the original.

I thought I had looked for "texture" myself, but immediately noted that I had been remiss in this respect. Representation of texture is one of the strong points of this absent critic, who is very quick to note its absence. This imme-

diately brought to my mind the advantages to be derived by the interchange of thought and ideas among photographers actuated by a common impulse of mutual improvement, meeting together socially at home, as well as once or twice a year at conventions. This has for some years back been the custom with a number of the men in my own city, and the basis of a vacation trip and the pleasures of a camp which have been a feature of the last two summers.

I think at our conventions that it would be well for the boys to go more in groups up and down the line of the exhibits for general discussion instead of alone or with one another. While commenting upon the exhibits, however, do not pass without remark that which has been well done, satisfying yourself by criticism only what might have been done better. The exhibitor is often near at hand, and he may be encouraged by knowing that something was good, instead of being disheartened by a thoughtless "roast." He who is toughened can stand these things.

(To be continued.)

COMMERCIAL PHOTOGRAPHY

Motor Vehicles and Chassis

N dealing with open touring cars to a lesser extent, with closed cars, also-an important thing to remember is that the modern car-builder sets great store by the line or sweep of the whole vehicle-almost as much as a costumer does by the hang of a skirt. The modern aim in body design has been toward getting as nearly as possible a straight line from the top of the radiator to the back seat, or, at any rate, a line between these points, which, if it is not straight, includes no sharp zigzags, but sweeps in a graceful curve from one end to the other. Therefore it is a matter of prime importance that the photograph should do justice to the body-builder's design, which latter, it may be added, extends also to the curve of the mudguards over the front and back wheels and their connection by the footboard. All this in a car fitted for the road is usually seen to better advantage on the left-hand side of the car—left-hand, that is, when one is seated in the vehicle. The other side—that on which the driver sits—often carries accessories, such as a Stepney wheel, petrol can, etc., which break up the lines of the designer.

Another equally important point is the height of the lens from the ground. If it is too low, the result is to represent the car as of higher build, viz., with more clearance above the road, and as this is a feature of the majority of the cheaper American motor-cars, the maker of the lower-pitched, more costly, and at the same time more comfortable-looking European car will naturally take exception to such a representation.

For a long vehicle like a motor-car, which generally should be photographed so as to show not only one side, but also something of the radiator front, a lens of long focus is again an essential, otherwise the too-near standpoint will lead to the rear portions of the subject appearing dwarfed in comparison with those which are nearer; also a panchromatic plate and a screen are necessary for the rendering of the color and surface of the painted and varnished body, and their use will save an immense lot of working up.

For use in catalogues the background requires to be entirely blocked out and a little wash put in on the prints around and under the chassis, but much use is made for advertising purposes of photographs showing a car in picturesque natural surroundings. Here there is much more lattitude allowed to the photographer, for the car may be shown drawn up on some mountain road, by a lakeside, or in some woodland clearing. and as much made of the general view, as reflecting the pleasures of motoring, as of the car itself. The reader has only to look at photographs used by leading concerns, in order to see the use which is made on these lines of well-known scenic show places and famous hostelries.

Commercial motor vehicles are likely to be a still more important part of motor production after the war. The refinements of line to which reference has been made scarcely apply to them, but the photographer requires to pay regard to their design from the utilitarian point of view of providing conveyance for different classes of goods.

Photographs of car chassis are much less freely used by motor firms, no doubt for the reason that about the only representation which usefully shows the details of a chassis is one looking down directly upon it, a condition which allows the draughtsman to score easily over the photographer, who, in such circumstances, must incur some considerable expense in rigging up his apparatus and, when all is said and done, cannot possibly show every detail as the draughtsman can. But for certain of the chief parts of a chassis, e. g., the two sides of the engine, the radiator, switchboard,

and change-speed gear, photographs with their absolute accuracy of detail might be more largely used, as also those of gearbox, back-axle, brake-drums, etc., showing the gears or other inside mechanism, and, therefore, requiring to be photographed as separate items. Almost every car, too, has got certain specially good features which can be brought to the notice of customers more effectively by photographs than by any other means. It may be the length or mounting of the springs, the strength or form of the front-axle, lubrication fittings, or some device for the comfort of passengers, any of which will be recognized in a moment by one who has had experience of cars or has the opportunity of hearing the special merits of the vehicle set forth by a salesman.

Silver, China and Glass Goods

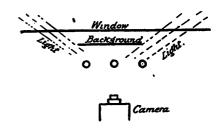
These are among, perhaps, the most difficult of the things which the commercial photographer has to photograph, but include so many descriptions of different and valuable articles, such as silver trophies, tea-sets, silver or silver-mounted cutlery, brushes, manicure implements, costly glass and china, that they are deserving of very full attention. lighting is all-important. It is astonishing the difference which one can secure by suitable control of the light, and I advise the reader to do all he can in this direction rather than adopt the advice which is often given, to dull the strongly reflecting surfaces of these goods by dabbing with putty, shoe-polish, etc. (in the case of silver), or with aluminum paint, sprayed on with an air-brush (in the case of glass). Many customers whose trade lies in these articles will look askance at these methods of doctoring the goods, and very rightly so, since silver goods in particular are most easily damaged, and a firm will be unwilling to give their business to a photographer of whom they have had cause for complaint in this direction if they can get the same quality of result from another who is able to dispense with these methods. Moreover, the brilliance of the results is never so good when any dulling preparation is used. What one has to

do is to obviate the reflection difficulty, which admittedly is a serious one, by

appropriate control of the light.

In the first place it is necessary to cut off the object from the view of surrounding objects, the reflections of which are apt to cause disturbing patches in the photograph. Secondly, one requires to work with a very diffused lighting and to reinforce that with a little strong light when it is specially necessary to give some extra sparkle to the reproduction. Generally speaking, the best way of doing both of these things at the same time is to make use of a miniature studio, consisting of a skeleton framework mounted on a stout wooden base and covered with thin muslin or tracing-Its dimensions may run about 20 inches in breadth and height, and somewhat less in length or depth. Naturally, its size depends on that of the goods which are being dealt with, but its cost is only a shilling or two, and it is money well expended to have two or three of them ready to hand. This miniature studio can be moved about on a table-top so as to secure the best position for it in a room or studio, a plan which is immensely less trouble than fiddling about with separate diffusing-screens. It should be open at the back as well as the front. since, with some transparent objects, very fine results can often be obtained by providing some light immediately facing the lens by fixing a semi-transparent background of ground glass or muslin far enough behind the object to be out of focus. For dealing with such subjects as cut-glass and highly-engraved silverware a modification of this miniature studio is simply a frame about 10 or 15 inches in depth and open back and front. The sides (inside) are lined with black velvet and the frame is stood in front of the background. According as the object is placed close to the front or set back a little within the frame it receives more or less direct light, and thus makes it easy to secure a greater or less degree of bright reflections, which can be further reinforced (as they can also in the use of the miniature studio) by bringing up a high-power half-watt lamp to give further strength in the way of sideway illumination.

In photographing glassware some photographers prefer to get somewhat the same effect by means of a strong toplight. Another method, which is recommended by an expert commercial worker, Mr. F. T. Beeson, is to place the glass goods in front of a background which, as shown in the diagram, is very little larger than the space occupied by the objects, and is placed a little in advance of a window. The glasses thus



get a certain amount of sideway illumination by transmitted light which serves to give a good rendering of their transparent nature.

Chinaware is a subject in which reflections give a lot of trouble by obscuring the pattern if they come awkwardly in the photograph. The miniature studio is the best means of obviating defects of

this kind.

As regards arranging the subject, a very good plan for small articles, such as cup and glasses, is a series of movable shelves, which are covered, the edges as well as the surfaces, with black velvet. This arrangement allows of a number of articles being set up for photographing together. In the case of flat goods, such as spoons, the best plan is to photograph them with the camera vertical, laying them on an easel of glass or of opaque material of suitable tint. Under these conditions, the camera-stand requires to be surrounded with an upright screen of tracing-cloth or muslin, again for the purpose of securing diffusion and avoiding reflections.

A most important matter is the choice of the point of view. As in the case of furniture, one has to give the customer the same kind of view which he has been accustomed to get from the draughtsman. For example, in the case of a cup both the back and front rims require to

be shown, as well as some view of the inside of the saucer. This calls for a somewhat raised position of the camera, and for proper drawing it is also necessary to work with a long-focus lens. In fact, in dealing with small articles, which often are photographed not smaller than half-size, it is more important to use a long focus than it is with large goods, otherwise one does not get far enough away. Also, unless the camera is at least 4 or 5 feet distant, it is impossible to deal properly with several objects at once when photographing them together, as arranged on the shelves already referred to.

Two last hints on these descriptions of goods—and they apply to all those of a strongly reflecting character—is to have the lens well hooded and to use backed plates without exception.

Bronzes

Bronze statues and statuettes look easier subjects than they are. On ordinary plates and under ordinary lighting they come out much too heavy and lifeless in the photograph. For the rich brilliance and the play of light and shade which they present to the eye you need to use, first, an orthochromatic plate with a light filter, and, second, a diffused yet concentrated lighting. In the daylight studio the blinds require to be adjusted to give an illuminating area of only a square foot or two, according to the size of the subject, but a very effective way of dealing with these subjects is by means of a 2000 c.p. half-watt lamp placed behind a couple of thicknesses of muslin. This will give strong points of high-light, yet with detail in them and the shadows. Where work of this kind is done for the artist you will find that often a result of the strength (contrast) such as you would hesitate to produce in the ordinary way will meet with more favor than one which you might think better as a facsimile photographic rendering. Many artists are keen on getting the spirit of their work suggested in the reproduction, and if they are satisfied with that, don't care much for photographic standards. This applies more, I think, to the more rugged styles of

modern work, of which Rodin's is a familiar example. But beware of going too far in this direction. It is necessary to discriminate not only as regards the character of the work (delicacy in contradistinction to strength), but also as regards the subject. A strength of lighting which would do justice to a statuette of a faun would be out of place for, say, an archbishop.

Dress Materials, Lace, Etc.

In dealing with all textile materials it is necessary to pay much attention to arranging a length of fabric (shirting, velvet, silk, etc.) in graceful folds; also to lighting it so as to bring out its texture. In other words, the photograph requires to be a pleasing thing to look at as regards the tones and the lines in it, and apart from its faithful rendering of texture, which latter, never forget, is of prime importance. Generally in the studio the main source of light should be to one side and well above the subject, and no larger than is necessary to get relief and brilliance without hard cast shadows. As regards the rendering of both color and textures, orthochromatic (or panchromatic) plates with light-filters are almost always necessary.

Lace goods, curtains, etc., call for a background to show up their design. This may be black velvet for light laces, or white for those of dark or medium color. Small articles, such as items of hand embroidery, small lace dress goods, are best laid out on a horizontal easel and photographed from above with the camera vertical. Larger things—curtains, bedspreads, tablecovers—require to be secured to the background (itself mounted on a solid support) with thin headless black gimp pins, avoiding any tight stretching, but letting the curtain, for example, hang of itself, and using the pins to spread it out. If one's facilities permit, simple spreading on the floor, with the background in between, and the use of a vertical camera above are better than pinning up, and, when apparatus is available, more expeditious. Here, again lighting requires to be to one side, and somewhat, but not very much, above the level of the fabric, in order to get

brilliance and detail and yet preserve the delicate character of these subjects. Negatives require to be soft; it is easy to make the mistake of over-developing to a harsh black-and-white result, which falsifies the light filmy nature of many of these subjects.

Photographs for Clothing Advertisements

There is a growing tendency on the part of manufacturers of ladies' hats, outdoor and indoor clothing and underwear, to use photographs of their goods taken from the actual articles as worn by a living model, in preference to wash drawings or lithographs. This branch of work is one which the expert portraitist can well graft on to his ordinary business, as it calls for a well-lighted studio, adequate dressing-room accommodation and a thorough knowledge of lighting and Even with all these requirements, it is by no means a simple matter to get good results. One of the chief difficulties is the obtaining of suitable models. Not only to avoid monotony, but to provide different types of face and figure to suit the various articles, it is necessary to have at command a number of trained models, who know how to carry themselves gracefully and to show off anything from a sombrero to a stocking in a chic and dainty manner. Moreover, they must be quite willing for their presentments to be spread broadcast through the world. Such models are sometimes found in private life, but, as a rule, the untrained girl has a gaucherie which makes her difficult to pose, and this adds appreciably to the labor of making the negatives. As a rule professional models, and ladies of the chorus and ballet, who make a side line of this class of work, are the most satisfactory. They may be reached by means of advertisements in the theatrical and variety stage papers, or by getting into touch with a theatrical agent or two. A careful register should be kept of height measurements, complexion and style of features, so that a suitable individual can be picked out for any work which may come in. As a rule manufacturers who cater for men's wear rely upon drawings, so that male models of this class are rarely required.

Although graceful posing and effective, if somewhat even, lighting are necessary, it must never be forgotten that the ultimate object is to produce what is more or less a diagram, which will give the fullest possible information as to the construction and material of the garment. Therefore the photographer must not yield to the impulse to subdue detail and to emphasize the attractiveness of the features, as he naturally would do in the case of an ordinary sitter. As many hats and costumes depend largely for effect upon color contrasts, it is necessary to use panchromatic plates and such light-filters as the subject may demand. As an example, certain shades of pink can only be rendered correctly by using a green filter. It would take too much space to go fully into this question here: I would again refer my readers to "The Photography of Colored Objects," by Dr. C. E. K. Mees, for further instruction.

A very important detail is the selection of the background, which must accord with the wishes of the customer, and should be decided upon when the order is given. In order to save a lot of unnecessary discussion, it is a good plan to have a portfolio of prints culled from the ladies' papers, comprising such styles as palatial interiors, outdoor scenes, sketch effects, graduated, and cloud as well as plain gray and white grounds. Years ago I remember a studio where such subjects as interiors of Buckingham Palace, Rotten Row and the paddock of a fashionable racecourse were specially painted for this class of work. If the photographer happens to be skilful with the brush, combination prints consisting of several figures cut out and pasted upon white or tinted card, the whole being "pulled together" by an appropriate sketch background, will be found a paying proposition.

General Advertising Subjects

Closely akin to the preceding class of work, but affording more scope for artistic ability, is that of producing studies and combination pictures from life for

advertising purposes. As an example of what is meant by this, I need only mention the well-known "Skipper," known to everybody in connection with tinned fish. This fine head was not taken from a real skipper, but from a well-known model whose features are familiar in other guises to anyone interested in poster and showcard work. Child subjects for infants' food, cows and cokernuts for margarine, fruit for jams, domestic scenes for tea, girls' heads for cigarettes, all find a ready market, and if the proof is complete with lettering its value is enhanced by many times the extra cost. Such designs are frequently required for colored work, and it adds much to the chance of obtaining an order if colored specimens are shown. For this I advise the use of transparent oil colors, which are much quicker to use and give a better idea as to how the picture will appear when reproduced in printer's ink than the best monochrome or even a water-color.

Animals

This is quite a special branch, and one, perhaps, which calls for more specialist knowledge, apart from photography, than any other. You want to know as much about animals as about photographing them, and, failing such knowledge, or the ability to pick it up in the course of work, you are pretty certain not to meet with any great measure of success—at any rate, among breeders of prize animals. For, broadly, customers in this branch are drawn from two (1) owners or breeders of animals (cattle, horses, dogs, pigs), and (2) keepers of animal pets. The breeder must have the photograph show the points of the animal; it is of no use to him if it doesn't. Study the photographs which you see reproduced in papers such as Country Life, and you will see just how the photograph of an animal which is satisfactory to the breeder differs from the merely pleasing picture which will satisfy the owner of a dog or cat companion.

As regards apparatus, the bulk of the work requires to be done with a stand camera. A hand camera is of little use,

with the exception of the half-plate reflex, of which good use can be made in the photography of animals out of doors.

Dogs are best photographed in the studio when it is a case of showing the characteristic points of their breed. The owner will want an expression of alertness, poise rather than pose, to get which, at the moment of exposure, very often a slight noise, such as the scrunching of paper, will be enough to cause the animal to take a position of liveliness. What is enough in this way for a terrier or setter is no good for an over-fed pug or spaniel, who often requires much more energetic means to rouse him from torpor. In the studio a dog is conveniently posed on a table about 3 feet high. On the table top is laid a board which has been coated with sand by first brushing over some hot glue solution and then dusting sand over it. A similar board is hung in front of the table. The two can be kept in readiness for canine photographs. This foreground is used in conjunction with a background which is light or dark, according to the color of the dog.

Usually the owner can get the dog to take a place on this low platform without any difficulty; if the animal is used to the leash, the leather strap or chain may be taken off and a thin, dull copper wire used in its place. It will hardly show in the negative, and can be easily touched out

Out of doors the half-plate reflex, used a couple of feet or so from the ground, allows a series of exposures being quickly made. A smooth lawn makes a good background, but where surroundings are not of this even nature, one can take a hint from the photographer of flowers and carry with one a small background fixed to three uprights each about 4 feet in length, and each pointed at one end, so that they can be stuck easily into the ground. By this means a plain ground can be set up anywhere where the sticks can be stuck in, and photographs made which compare with those taken in the studio.

In photographs of horses it is necessary to show all four legs, to have the head erect and the ears forward. The camera requires to point somewhat to-

ward the head from a point slightly in advance of the horse. It is then easier to show the legs separately. One old dodge for getting an alert pose in photographing horses is to have an assistant some thirty yards away with a barrel containing a loose brick. The sight and sound of the barrel being rolled somewhat further away will serve to interest the animal to a sufficient degree.

In the photography of cattle, as also in that of horses and dogs, a long-focus lens is essential in order to secure pleasing drawing and to avoid the foreshortening which cannot be helped if the camera has to be put too close. In dealing with prize cattle, the broad back is often the feature which has chiefly to be looked after. In order to show it properly in the photograph it is necessary to have a raised position for the camera.

Where there is a choice of photographing cattle in their home surroundings or at a show, the former should invariably be selected. Conditions at a show are usually more unfavorable to getting the best position for the camera, and, moreover, animals as a rule are disturbed by their strange surroundings, and are constantly on the move, making it almost impossible to give a sufficient time of exposure. Moreover, the lighting conditions have often to be taken as they come, whereas in the breeder's own yards or pastures the lighting can be chosen for the best results.

Prize birds are difficult subjects, calling for special means in the way of posing, such as the cage of coarse wirenetting, built on legs to bring it 4 or 5 feet from the ground.

(To be continued.)

OBTAINING UNIFORM TONES IN SEPIA PRINTS

By ALFRED J. JARMAN

To obtain an even color with sepiatoned developed paper prints has proved very often to be very troublesome to many photographers in their usual conduct of business. There are a number of reasons that account for this which do not arise from one and the same cause. The principal causes will be described, and practical means suggested to secure prints of an uniform color. Sometimes the cause of variation in color is due to unmistakable carelessness. By exercising ordinary care no difficulty should be experienced in securing uniformity in color.

The first method to be dealt with will be the well-known hypo-alum toning bath, because this low-priced and highly appreciated toning bath is utilized by very many photographers, either in a hot or cold state. The solution as a hot toning bath is here given, because it may be made in the proportion mentioned, or it may be made up in ten-gallon lots. It answers the purpose well, while a tone with a reddish tinge to the prints may

be produced by the addition of a small quantity of carbonate of soda at any time. The following is the formula for the hot hypo-alum bath:

Water	4	64 fl. oz.
Hyposulphite of soda		8 oz. av.
Powdered alum .		2 oz. av.

The hyposulphite is added to the water while boiling; when this is dissolved, add the alum; stir well, and allow the solution to become cold, when the following must be added, which consists of freshly formed chloride of silver:

Water					2 fl. oz.
Nitrate of silver					30 gr.
Common salt or	cl	nlor	ide	of	
sodium .					30 gr.

The silver nitrate must be completely dissolved before adding the salt. Stir the solution well with a glass rod when the salt is added; the white precipitate formed is chloride of silver. When the hypo-alum mixture is cold, add the whole of the silver chloride mixture, stir the

liquid well during this addition, which will completely dissolve the silver chloride, forming in the liquid hyposulphite of silver. This chemical preparation aids in the rapid sulphurizing of the devel-

oped image.

The finest sepia prints are without doubt produced upon what is called sepia buff paper. Now to produce perfectly even prints, uniform in color, and employing the hypo-alum bath heated to 120° F., it will be necessary in the first place to test a small strip of the buff paper upon a negative. The time of exposure should be noted, and then the time of development for a fully developed print. By way of illustration, say the time of exposure is fifteen seconds, and the time of development two minutes: then if these times are correct for the development of a fully developed print, the same time given to every exposure will produce uniform development, and if these prints are converted to sepias in the 120° F. hypo-alum bath, every print will turn out to be uniform in color. If, however, the time of exposure has been increased or diminished, then the color of such prints will not be the same as was made by the first exposures; the reason being that if the time of exposure has been increased or diminished in one case, then, there has been more silver or its compound deposited in a more or less dense condition and consequently there will be a change of color in the sulphurized image. But if the time of exposure has been uniform and the time of development also, then, upon treatment in the hot hypo-alum bath at the temperature given, there will be no difference in color, upon complete sulphurization, every print will be an uniform sepia. Any variation in the time of exposure and development will assuredly give an uneven color to the prints. It has been the writer's experience to witness the sepia toning of prints upon buff paper 20 x 24 inches, the development having been variable by the person who developed them, resulting in fifty sheets unsuitable for delivery because of their variable color, from a cold blue-brown to a mustard yellow, all caused through either carelessness or want of knowledge of the underlying

principles that control the silver deposit in the process of development.

The following formula for a developer well suited for the development of buff paper exposures may prove of service. It may be mentioned here that when the prints are removed from the hot hypoalum bath that they must be laid back down upon a clean board, and the surface of the print carefully wiped with a good-sized piece of absorbent cotton, well wetted, while a stream of water is allowed to run over the surface. This is to remove any particles of deposited sulphur, which if allowed to remain would spoil the print. After a thorough washing the prints may be dried ready for trimming and mounting.

Developing Formula

Paramidophenolhydrochloride	
(kodelon)	20 gr.
Hydroquinone	60 gr.
Warm water (rain or distilled)	12 fl. oz.
Sulphite of soda (dry)	150 gr.
Carbonate of soda (drv)	200 gr.

Dissolve as given; add 12 fluidounces of cold water, and 20 drops of a 10 per cent. solution of potassium bromide. (Sometimes 30 drops may be required; a test upon a small strip of paper will quickly decide this.) The temperature of the solution for developing should be about 60° or 65° F.

Another method for producing sepia prints is by the use of a potassium ferricyanide and bromide bleach, then converting the bleached print to sepia by immersion in a solution of the monosulphide of sodium. For bromide prints this method leaves little or nothing to be desired.

It may also be mentioned here that the correct time of exposure and development is just as important for uniformity of color as in the case of the hypo-alum prints. At all times the necessity of a well-developed print is essential for the production of brilliancy and uniformity of color, otherwise, no matter what process or method is adopted, true and uniformly colored sepias cannot be obtained. The following formula for sepia tones upon some of the development papers, and bromide in particular, has proved to

be, from many years' practice, an excellent one:

Bleaching Solution

Α			
Water			24 fl. oz.
Ferricyanide of potass			
prussiate	٠	٠	1 oz. av.
В			
Water			24 fl. oz.
Potassium bromide	-		1 oz. av.
С			
Water .			48 fl. oz.
Water Sodium monosulphide			$\frac{1}{2}$ oz. av.

When employing the above formula, mix equal parts of A and B, add 4 drops of strong water ammonia to 12 ounces of the mixture. (For good effects this must not be omitted.) Bleach the prints completely in this mixture, wash them well, then place them into the sulphide solution, turn the prints over and over. As soon as the sepia color is obtained

wash the prints well for a few minutes, then place them into the following bath:

Powder	ed a	lun	1		1	oz.	av.
Water					30	fl.	oz.

Immersion in this will rid them of the slimy feeling of the surface after leaving the sulphide bath. Then wash them well for twenty minutes, when the prints may be dried and trimmed ready for mounting. It may also be mentioned that the use of the short stop or acid dip. as it is often termed, must always be used directly after development, otherwise development will proceed to a certain extent if placed in plain water only. This way of working will always produce unevenly developed prints. Although it may not be visible in the print before changing the color to sepia, it will be sure to show the defect when the sepia operation has been completed.

THE PITTSBURG SALON, 1919

THERE may be differences of opinion about the position and the value of photography as an art, but there certainly can be none about its value as an art-educator. No better evidence of the immense strides which camera work in this country has made was more convincingly demonstrated than that at the Sixth Annual Pittsburg Salon, held at the Carnegie Institute during the month of March, the success of which eclipsed the display of last year.

The ample galleries were quite ideal for such an exhibit and splendidly arranged to show the prints to the best

advantage.

As usual, each picture was hung under glass, and the excellent taste in arrangement and display gave a most

pleasing impression.

There were about 900 prints submitted from 157 contributors, 107 of which were successful. California and the Pacific Coast were generously represented, with 76 prints to their credit.

The general high standard was most uniform, and of an unusually good

The members were particularly fortunate in having on the Committee of Selection John Paul Edwards, of Sacramento, Calif.; Dr. D. J. Ruzicka, of New York City; and Samuel A. Martin, of Pittsburg.

One of the features of the exhibit was the six exceptional clear-cut bromides by Ford Sterling, of Los Angeles. Each print shows the work of a capable worker.

Miss Margrethe Mather, of Los Angeles, shows work wonderfully characteristic, and her choice of subjects with Chinese models suits her temperament.

The striking and original prints of Frederick F. Frittita, of Baltimore, Md., show clearly he has a firm grasp on his work and knows what he is doing. Each of the six prints was of high quality, and looked like carbons.

John Wallis Gillies, of New York

City, had three beautiful water scenes,

each showing fine work.
Floyd Vail, F.R.P.S., of New York City, was represented by "Autumn Morning," a picture of high quality, instinct with the spirit of autumn, striking in differentiation of tones and vibrant with misty sunshine, which this pictoralist renders in a manner equalled by few in this country.

Herbert H. Piper, of San Francisco, one print, "A Worker on Canvas," was

effective and suggestive.

The high quality of Arthur F. Kales's work is too well known to invite even comment, and his six prints were undoubtedly the best bromide work in the Salon-clear and beautiful-"A Portrait in High Key" is the work of a finished artist.

T. W. Kilmer, of New York City, had but one print, "Young America," which was excellent. We would like to have seen more of Mr. Kilmer's work, which is always of a high stand-

ard.

Francis O. Libby, of Portland, Me., was represented with six splendid multigums. It will be a long time before Mr. Libby will do anything more original and finer than "The Spirit of the Winds.'

Miss Jane Reece, of Dayton, Ohio, displayed her individualism in the extreme. The print "My Mother" is a wonderful bit of portraiture in composition and general treatment.

Some of the best examples of carbon work were by N. S. Wooldridge, of

Pittsburg.

Mr. W. H. Zerbe, of Richmond Hill, N. Y., had a very fine print, "Stranded on Fire Island Beach.

Miss Eleanor W. Willard, Grand Rapids, Mich., had an effective red

chalk gum, "The Artist."

The work of Edward Henry Weston, Glendale, Calif., is known internationally. All of Mr. Edwards' prints were original in treatment and of a very high We are pleased to show our readers the print "A Figure in the Nude."

"The Pennsylvania Station, New York," by Dr. D. J. Ruzicka, shows a fine treatment of a very difficult subject. His other prints were varied and charming.

William Gordon Shields, New York City, had an effective gum, "Corinthian Colums," and two bromoils of a very fine quality.

A charming and effective print, "A Japanese Fantasy," came from a new worker, Peter J. Schweickart, Irvington,

N. I.

Thomas O. Sheckell, of Salt Lake City, Utah, showed good treatment in his winter scenes.

One of the fine individual pictures in the show came from Edward Larocque Tinker, New York, "The Country Club Oak."

The only exhibit from England was two excellent prints by H. G. Summons, Virginia Water.

Joseph D. Toloff, Evanston, Ill., sent a very beautiful portrait study, "Girl

with Black Hat."

O. C. Reiter, Pittsburg, Pa., President of the Photographic Section, upon whose shoulders the real burden and details of the Salon fell, had five beautiful prints, charming in atmosphere and treatment.

George Alexander, Chicago, Ill., "A Stately Entrance," is a dignified and wonderfully beautiful gum. Our reproduction cannot do justice to the effective tone and quality.

A pictorialist whose work shows advancement is that of Harold C. Bullard, of Bridgeport, Conn. "The Little Pig should have deserved a better title, how-

Another striking print came from A. D. Brittingham, of Bridgeport, "Love's Secrets" and "Babe H.," a sweet mother and babe.

Charles K. Archer, Pittsburg, Pa., had four pictures: "The Sun Dial," a decorative carbon, and "A Rural Home," another carbon of a homestead.

G. Buell and Hebe Hollister, Corning, N. Y., sent a very charming bromoil, "Elms by the River."

Some fine nudes were shown by Louis A. Goetz, Berkeley, Calif.

G. W. Harting, New York, had five fine prints, showing strong work.

The work of John Paul Edwards, Sacramento, Calif., has a true art quality, beautifully transparent and the finest bromides. His "In the California Hills" is the best example from

this artist photographer.

Mr. Louis Fleckenstein, Los Angeles, Calif., seems to have caught the fever of the real amateur, for his six gum prints show renewed energy.

George Henry High, of the Chicago Camera Club, sent two prints, "Twilight," and "Dawn." We take pleasure in reproducing "Dawn."

Few workers in bromoil can excel Dr. A. D. Chaffee, of New York. His six prints were among the most beautiful in the exhibition. It is a privilege to be able to show our readers his "Brenton Road."

A pictorialist who has won high recognition is Dwight A. Davis, of Worcester, Mass., and we regret this gifted artist had only the one print, 'Home Industry," which shows good composition and general treatment.

Alexander P. Milne, New York, in his three prints had usual good subjects

and fine rendering of value.

Remick Neeson, Baltimore, Md., gave us his best in "Pillars of the Sky, showed beautiful technic in "Still Life," "Roof Tops" and "St. Martin's Columns."

W. H. Porterfield, Buffalo, N. Y., is known internationally for the striking originality and boldness of his work. His six prints were all of the highest standard, and we especially would mention "Solemn Watchers of the Night."

The prints by E. M. Pratt, Los Angeles, were all good.

Dr. Rupert S. Lovejoy, Portland, Me., had six most effective multigums.

We wish to speak especially of the splendid bromoil prints by Dr. and Mrs. Charles H. Jaeger, New York. "Reverie," by Doris U. Jaeger, and "After the Blizzard," by Dr. Jaeger, were wonderfully distinctive.

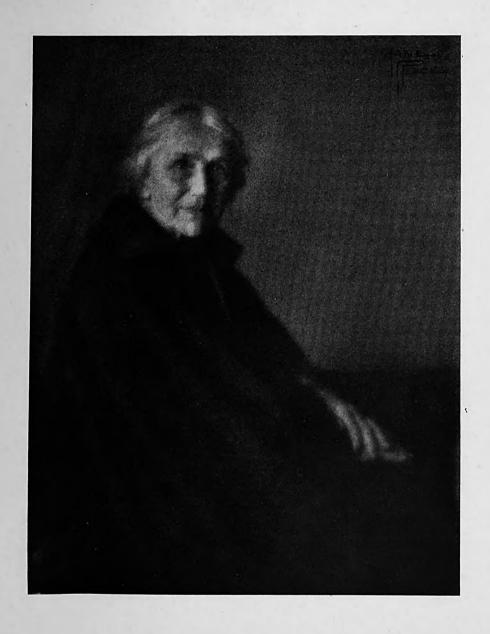
That fine artist-photographer Bertrand H. Wentworth, Gardiner, Me., had three of his characteristic pictures.

Among the other exhibitors worthy of mention were C. B. Albree, Pittsburg, a beautiful carbon "Tangiers;" W. M. Amos, Columbus, Ohio; George Arents, Jr., New York; Laura Adams Armer, Berkeley, Calif.; Alice Boughton, New York; Gertrude L. Brown, Evanston, Ill.; Ralph Willis Brown, Los Angeles; Alice Burr, San Francisco; A. B. Case, Jamestown, N. Y.; C. W. Christiansen, Chicago, Ill; Kenneth Dows, Denver, Col.; Edwin Gore Dunning, New York; Thomas R. Hartley, Pittsburg, Pa.; Roberta Hostetler, Davenport, Iowa; William F. Kriebel, Philadelphia, Pa.; Claude L. Moore, Buffalo, N. Y.; W. C. Sawyer, Los Angeles.

The attendance was unusually good, and many photographers who had come for the Middle Atlantic States Convention were glad of the opportunity of viewing this notable exhibition of picto-

rial photography.





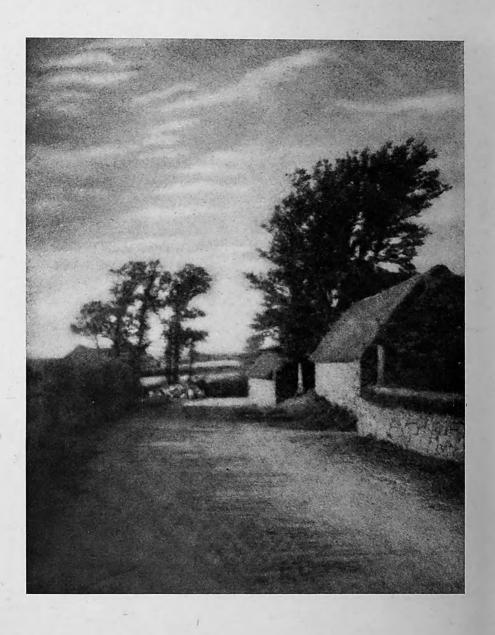
PITTSBURG SALON, 1919
"MY MOTHER"
BY JANE REECE
DAYTON, OHIO





PITTSBURG SALON, 1919
"EMILY"
By FORD STERLING
LOS ANGELES, CALIF.





PITTSBURG SALON, 1919
"BRENTON ROAD"
BY A. D. CHAFFEE
NEW YORK CITY

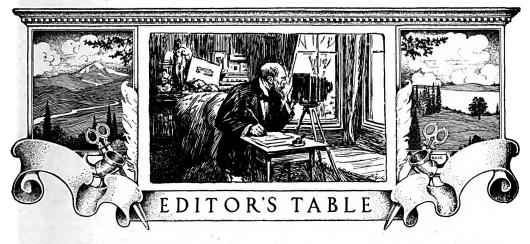




PITTSBURG SALON, 1919
"HOME INDUSTRY"
BY DWIGHT A. DAVIS
WORCESTER, MASS.







BIG AND LITTLE BUSINESS

APPY is the photographer who can keep himself busy. Those who are busy are those who are pushing forward most energetically and most wisely. They don't make much noise in their progress, but it is full of quiet energy, and business flows their way. They are doing good work—better work than they did last year; they let the public know about it in a persuasive way, and prices tend upward as the volume of business increases.

We have often wished, as we have gone about the studios of New York, that we could show the workers in the smaller towns by what stress of effort the leaders keep ahead of the procession, and how hardly their success is earned. The difference between the big and little business is clearly seen to be simply a difference in energy and its application, and the man stagnating in the small business (if he has sense) says to himself that the same amount of energy, applied as wisely, would bring success in his own town.

But unless a man sees it with his own eyes it is difficult to get him to realize this fact. He dreams of the elaborate equipment, the expert operators, and the never-failing stream of customers which make up the big city studios and their success; while all the time the equipment of the city studio is more often than not inferior to the country gallery, the expert operator's myths, and success

the result of a lot of hard work and thought.

Let us persuade those who are waiting for "something to turn up," to turn things up for themselves, and to begin to do now what they propose to do when Peace time comes. The first requisite for a growing business is good work—work that will draw big orders, that will stand a good price, that will bring new custo-Then it should be made known, brought before the people who are supposed to need it, put where they can see it and be attracted by it. This simply means advertising in every way that commends itself according to local conditions. Look to the place of business, make it attractive; have a special room devoted to display, and throw it open to the public; throw out feelers for business and do not be afraid to seek it; put your energies into the getting of patronage, and so handle your trade that you get out of it all it should yield. Keep the duplicate order business always active by the aid of a reception-room assistant who knows how to work it for profit; see to the proper treatment of your patrons in the studio, that they receive all the care and courtesy you can command. Watch the finishing of the work, so that every picture leaving your hands shall be a business persuader. Introduce sufficient novelties to keep the public interested in what you do; the one-idea man will soon drop out of sight in a small community. Put your prices on such a basis that your patrons pay a reasonable

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profit upon all they get, so that those who occupy the best part of a day pay more than the sitter who takes half an Seek simplicity in manipulation so far as is consistent with progress. Avoid waste by thoughtful buying and careful use of materials and apparatus. short, imitate the leaders in the big cities whose success excites your envy and work for success as if you really desire it.

GENRE

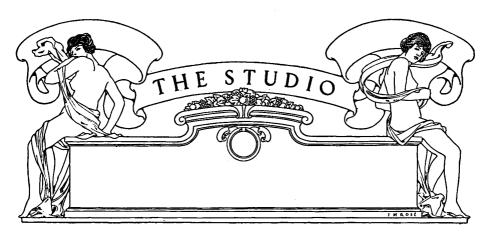
T is very seldom that we see a genre picture that is quite satisfactory in Have you ever every respect. thought about it? If not, just do so next time you see some genre subjects in the exhibitions. You will find that the photographer is first and the artist second. The photographer has got imbued with his posing and studio notions, and you feel that his figures are stiff and not the real thing. To begin genre work there is one safe rule—simplicity. Don't be an overgrown amateur. We can excuse the beginner and pity him when he gets into the dark room and finds that his stuff won't work; but the professional should know better than to want to turn out a picture at the first attempt. We believe that all who want to be really successful with genre work should commence out-of-doors. Occasionally we see a good interior piece, but blacksmiths or gossipers become very monotonous, and we fear that when we see even the best of them we are less interested in the picture than in how it was Our first thought is, "Yes, a clever flashlight; he handles his light well." More than fifty years ago an Englishman, Robinson, commenced Long before flashout-door pictures. lights or modern facilities, he practiced combination printing with wonderful skill and patience. He would sometimes print from several negatives by careful washing; at other times he would cut fragments of film from his various negatives and blend them together so carefully on one glass that the

picture printed without any sign of the faking. The simplest form of combination printing is the printing in of clouds. which everybody can do, but not always well.

We would, therefore, suggest as a very practical education in genre work that out-of-doors subjects be tried. Do not go out with a special model, or with any fixed idea, but just go prospecting with the children or with a few friends. Go into the woods or the orchard or beside the water, and take a hint from whatever comes along. If the flowers tempt them, let them start picking them. If they are girls they will be every momenting raceful poses. Have a hand camera with you, and let them go ahead with their flowers. Give a quarter second exposure, and you will get all their naturalness.

Lots of practice of this kind will do good. The second ramble will yield results in which the mistakes of the first one are missing, and before long you will find you will have a picture which will give genuine pleasure even to people who do not know the models. Do not get the notion that the highest out-door work is easy of attainment. It is easier to get pleasing results out-of-doors for several reasons. The models are so much more tractable and natural. Let them pick flowers or bait a fish-hook and they do not assume that photographic pose which is the bane of a set scene in-doors. They palpitate with healthy enjoyment, instead of dismally attempting not to breathe or blink. And secondly, there is none of that artificiality of background. And backgrounds are a real difficulty, even if the latter is genuine.

When you have learned your lessons with the hand camera (and your models have at the same time fallen in with your ideas) you may take your larger with you and attempt to camera again obtain some of your happier re-This education in the open will prove of incalculable advantage when the in-door work is tackled. This in-door work will introduce quite distinct problems, taxing both skill and patience, but they will be surmountable if properly



PRACTICAL PAPERS ON STUDIO WORK AND METHODS

Dressing the Show-room

EVERY professional has a show-room. You may call it the reception-room if you like, it does not make any difference, it still remains the show-room, by means of which you try to sell portraits. It's just like the show counter of a dry goods store, where the silks, satins, and cottons are displayed and from which your customer—or, if you prefer the term, your client —chooses that particular style of portrait that pleases him and for which you get the money. It would be interesting to know how many

It would be interesting to know how many times the show-room is redressed in the year; that is, how many times the pictures in it are changed. I have been once a month during the last year into the reception-room of a local brother, and at every visit the same old prints greet me on the walls except for a few extra

fly-dirts.

I went last year to an amateur exhibition and was so struck with the whole thing that it has completely revolutionized my show-room. The whole place was draped in white; there were no frames and but few pictures; yet the total effect was restful and more striking than any that I had hitherto seen. That got me; I determined to adopt it at once, and possibly a description of the same may set some other fool thinking.

The walls of my reception-room were papered with a soft, indefinite-patterned paper of a somewhat dark grayish-brown, and, as I did not want to repaper it entirely, a bolt of good quality white cheese-cloth was obtained. This was cut into sufficient lengths to reach twice from wain-scoting to ceiling. The lengths were then folded in half, tacked to the wall close up to the ceiling, and then strained straight and close to the wainscot and again nailed. The whole room was dealt with in this fashion, but a narrow one-inch space was left between the lengths of cheese-cloth so as to form a series of panels.

Each panel was treated differently, but there was one common feature. No frames of any kind were used. For one panel nothing but straightedged 8 x 10 prints on large white mounts were used. The highest print was just eight feet from the floor, the lowest just four feet. The central

print was a rather dark, heavy print and the others round it were all lighter.

Sheets of glass of the exact size of the mounts were obtained; also some little steel hooks shaped like the letter L, the longer arm being one inch and the shorter arm half an inch in length. Two of these were driven into the wall below the bottom edge of the mount, the glass slid into position, and then another hook driven midway at the top. These held the glasses quite firmly and yet one could easily slip a print out for change or examination.

Another panel was devoted to rather small sepia prints, mostly cabinet size, keeping the top line of the prints just seven feet from the floor line and the bottom line only four feet six. All these were without borders. Above was hung a 20 x 24 sepia enlargement of an interior.

Another panel was devoted entirely to children, the central picture being an 8×10 enlargement and the others all with white backgrounds.

Each panel in the room was treated differently, and as far as possible devoted to one style of print. Two or three good enlargements were hung somewhat high, while over the fireplace, for I am lucky enough to have an open hearth in the room, was hung a six-foot enlargement of Landseer's famous picture, "Shoeing the Bay Mare," of which I happen to have a very good copy.

The first panel I started on took me a whole day to get just right and I had the pictures up and down at least a half-dozen times, until on altering them once they were all laid on the floor, when it instantly struck me that that was the proper place to arrange them in, and then transfer them to the wall. With succeeding panels this plan was adopted and it was astonish-

ing how quick one got on.

When completed the effect was most striking and many a favorable comment was made by visitors, and even those of my brother professionals who occasionally drop in for a glass, a chat and a smoke in the evening, said that they thought it looked fine. One even went so far as to say that he was going to take the idea and beat me to it. A week later he called me up by phone to come to see his room.

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His room is not quite so lofty as mine, but is longer and narrower and the walls were painted a delicate green. He had just bought a roll of cheese-cloth and stretched it as a panel all round the room, just tacked it up for its width and had hung on this white belt a few large prints. The effect was distinctly good and striking, and in fact it had more the effect of an exhibition than a reception-room.

There are one or two points which have struck me in doing this work and I may state that the arrangement of the room is not, and will not, be allowed to remain the same more

than two months together.

My first arrangement was striking and ex-cellent from the commercial point of view of a specimen room; but the differentiation into distinctive panels was a little trying after some One felt there was not enough continuity. So, the second time, the dark lines between the panels were abolished, the edges joined together, and one wall was hung with all black prints, the shortest wall with sepias, and the other long wall with nothing but a few good enlargements, and here and there a few tiny medallion portraits in circular form.

The possible variations seem endless, and I am scheming out a design to make the room like an old paneled room, with ceiling as well as walls paneled, with a high china rail, and place nothing but one or two pictures in each panel with some distinctive china above. So far as I can see the expense is not going to be much, as the whole of the work is done by myself and one assistant in odd times, and he is as keen about

it as I am.

Let me add that I do a little advertising in the local paper and am pretty good friends with the local editor, who is a camera fiend of the worst type. I was fortunate enough to obtain quite a good write-up, and as I also sent out some nicely printed invitations, quite a few people have called in to see the room and some business has resulted.

One of these days I intend to try the effect of hanging the room in black, with just three or four all-white prints, but I am a little afraid to

start it.

The Camera in Advertising

A Paper read by Wm. Shewall Ellis, of Philadelphia, before the Poor Richard Club, March 17.

THE camera is becoming more and more the eye through which the public may view your goods. If this eye is properly trained the results are bound to make a more direct appeal to the masses. Some of our artist friends would have us believe that photography has not attained to the dignity of a fine art. The definition of "art" is so confused I don't believe anyone has the right to say what is, or what is not art. At any rate photography is honest-and honest advertisement spells success.

The camera in the hands of an expert can be made to yield elements in black-and-white that are hard to duplicate in any other method. The camera works with speed, and registers on the sensitive film—detail, action and emotion. These are all qualities that are essential to the making of a successful advertisement.

One of the great advantages to you, as a buyer of advertising designs, is that you can be supplied with a large variety of proofs outlining in detail what can be expected in the finished result. This you are able to show to your prospective customer, suggesting attractively your outlay of type and color.

You will admit there is no greater appeal to

the public than a direct photograph of the subject that you are advertising. I refer to the Goodyear Tire, The Overland Car, The Ball and Band Leather Boots, etc.

The most successful demonstration of this is found in the Eastman Kodak method of advertising. In former years the artist painted pictures for them of the fond mother kodaking the kiddies. Today they use photographs. I speak of this because I have studied their requirements and have become deeply interested in obtaining results that tied up with their sales department. The results must have paid them because they paid me \$3000 for six 8 x 10 negatives. I believe that the field for this kind of work is unlimited.

The motion-picture side of the question is fast

coming into its own.

Take the educational advantages of a picture well done, showing the natives of India gathering the rubber, packing and shipping it to this country, the tire factory moulding it into tires, the tire finally placed on the wheels of a truck carrying tons of food and supplies to all parts of the country. It is telling a constructive story to

thousands of people in a very few minutes.

Motion-picture advertising requires a large outlay of money at the start, but I believe for the number of people that you interest, and the concise way that your story can be told, it is by far the most virile form of advertising.

I repeat that the camera is the eye through which the public may view your goods. Let the camera in the hands of an expert tell the story

that you have to tell.

Remember this when Re-decorating your Studio

At this season of the year when everyone is thinking about cleaning and redecorating, we would like to make a suggestion that may save you money and will help you out considerably when you do.

In tinting the walls of a studio, it is essential to keep in mind to get the best out of them. The following table is an exact one taken from experiments by scientists in determining refraction of colors, and it may be relied upon to answer the question: "What color reflects or

absorbs the most light?"

Pure white reflects about 70 per cent. of the light falling upon it; pale orange nearly 55 per cent.; pale green, 46 per cent.; pale yellow, 40 per cent. While not often used in offices it may also be of interest to know that in the same way, pale blue reflects only 30 per cent. of light falling upon it; dark yellow, 20 per cent.; pale red just over 16 per cent.; dark green about 10 per cent. and dark blue only 6 per cent.

Advertise Now

Business is never so good but what you should continue to advertise in one way or another. Right now when you are extremely busy you should advertise; in fact, you should advertise all the time. Some time in the future a reaction is sure to come, we do not know when, but when it does come you want to have enough trade to carry you through so that you can still do business and make something out of it.

We find that many photographers are busy and have stopped advertising in several cases. They are in such a hurry for their goods that they are not having their mounts embossed. Embossed mounts are advertisements which no one can

afford to do without.

Plan your summer and fall advertising now, never mind if you do have more business than you can handle; possibly you cannot get help to turn out your work—that makes no difference, advertise just the same. If patrons come into your studio and find you busy they will want pictures even if they only come in to look over your samples. It is human nature to want what you can't get or what is hardest to get.

Be very careful and not get too independent; do your level best to deliver every picture when promised. Advertise in every way, advertise your business not only to benefit it now but to benefit it one, two, three, four and five years

from now.

Photography in Advertising

HAVE you noticed that half-tones are elbowing line blocks out of advertising columns?

Not only do you see photographs of the goods to be sold, but also of factories, workrooms, warehouses and shops. And, thanks to human vanity, many inventors and proprietors think that the best way to sell their products is to publish their own photographs.

Photographs make a direct appeal: "These are the goods we want to sell; this is the factory where we make our goods; this is where we pack them; this is where you can buy them; and these are the men who invented and produce them." Manufacturers and tradesmen know that such a direct appeal to the eye is more convincing than

mere argument or vague description.

There are factories or shops in your district where your fellow citizens are making or selling corsets, clothing, fabrics, furniture, boots, hats, motor-cars, bicycles, machinery, cutlery, patent foods, biscuits or battleships. Photographs of these things are wanted for catalogues and for the advertising pages in newspapers and maga-

It isn't only the large firms that use photographs. They are being used more and more by grocers, bakers, tailors, ironmongers and every tradesman who issues any sort of a circular or price list. The tradesman who isn't using photographic illustrations stands in danger of falling behind his competitors; and it should be an easy matter for either a photographer or a printer (or both of them working hand-in-hand) to bring that danger home to him.

There is plenty of commercial work for the professional who will make a determined effort

to get it. But there are many who do nothing to create this kind of business, or even to get their share of any orders that are going. They are under the impression that it means so much worry and so much attention to detail that it becomes in the and unprefitable.

becomes, in the end, unprofitable.

This is a great mistake. Few branches of photography can be made so profitable. But, of course, nothing that is really worth doing can be done without trouble. The troubles of the commercial photographer come, in the main, from two directions: he may find it hard to get a satisfactory photograph of his customer's goods or premises; and, when his photograph is everything that can be desired, he may grievously be disappointed over its reproduction in half-tone. Now the remedy for both these ills lies mainly in his own hands.

First of all, the photographer must realize the difficulty of photographing such articles as carpets, furniture or silverware. To attempt to make a satisfactory negative of a Persian rug, or an inlaid Sheriton sideboard, or a presentation cup, or an ordinary plate is, to put it plainly, asking for trouble. How can you hope to satisfy a draper with a photograph of a blouse that is rich in red, green, yellow or orange shades, if you insist on using a plate which is almost

insensitive to these colors?

In all cases you should use a panchromatic plate with its appropriate filter. Without it, how could any photographer hope to prepare the illustrations for a nurseryman's catalogue?

The extra cost of the Warren Plate is too trifling to consider whenever correct color rendering is essential to success. Similarly, backed plates should always be used when you are photographing any highly polished object, such as furniture, silver or machinery. Where halation is more to be feared than inadequate color rendering, it would be well to use the new Eastman Portrait Film, backed up by a piece of black cardboard, because the thinness of the film reduces to a minimum the scattering or reflection of the rays.

The second great source of worry to the commercial photographer is the difficulty of getting his photographs properly reproduced in half-tone. He often has to complain about lack of contrasts, want of detail and false tone values. Who is to blame? The wise photographer will always suspect a beam in his own eye before looking round for a mote in the eye of the block-maker or printer. The half-tone process calls for a certain kind of photographic print if the best result is to be obtained. Clean, sharp work is essential. Most blockmakers prefer glossy prints. These can be made on Solio, Velox or Nikko. Sepia tone bromides are not suitable. A good blue-black is generally the most satisfactory; if prints are toned at all the tone should be purple or blue-black.

If the reproduction is unsatisfactory, even after you have supplied a perfect print for the purpose, then you can fairly throw the blam n the blockmaker or the printer. You will find in practice that they are always willing to blame each other. In your own interests you should use your influence with your customer to make him entrust his half-tone work to none but the best workmen. Make it your business to find out the

best blockmaker available, and then insist on his putting his best work into your photographs. Owing to the imperfection of the half-tone process, a great deal must be lost in the reproduction, but don't let the sacrifice be too great. Always compare the blockmaker's "pull" or "proof" with your original print. Look first at the high-lights, and see how much detail he has lost there; then look at the deepest shadows, and see how much he has lost there; then examine the half-tones; and, finally, compare carefully the relative tone-values in his work and yours. If the block falls short of a reasonable standard, you owe it to yourself to point out its

deficiencies to your customer.

But even a perfect half-tone block may be spoiled in the printing. Hence you should get in touch with the very best half-tone printer in your district, and do all you can to put business in his way. In fact, the professional who wants to make money out of commercial photogrpahy might profitably fix up a working arrangement with the most progressive printer of his town. Photographer and printer can each use his influence to turn orders in the direction of the other.

-Professional Photographer.

The Pose of the Figure

Posing is one of those branches of photographic work in which natural intuition is a necessity, although it can be developed very largely by practice and study. It is full of difficulties and pitfalls: but, on the other hand, if these are successfully met, the result will give much greater satisfaction than can be got

from success more easily attained.

The beginner generally starts with a head and shoulders portrait, and this, although not without difficulties of its own, is free from some of the greater ones which are encountered when we deal with a full length. Here, so far as pose is concerned, the great factor is the carriage of the head. This in many sitters is almost as characteristic and expressive as the face itself; and we have to endeavor to secure that characterization. To do so, we must first learn what it is, so that we can see when we have it; for although in a snapshot portrait taken when the subject is not conscious of the presence of the camera, we shall be likely enough to get it without any trouble, the case is quite different when the model knows he is facing the camera.

The way in which the body of the sitter is supported affects it very greatly; and as in most head and shoulders portraiture the rest of the picture gives little or no clue as to whether the subject is standing or sitting, we must take care that the method of support is that which best brings out the characteristic poise of the head. In the case of men it will generally be found

that this is secured more easily when they are When seated there is a tendency for the head to sink between the shoulders. But a standing pose, when the exposure runs into many seconds, is very apt to cause movement; and so, to prevent swaying, a support of some kind, such as the edge of a table will provide, may be given to the back.

Very little study will be needed to show that, although the hands may be right out of the picture, their position is of importance, since it influences the shape of the shoulders. forward and clasped, the pose of the head and shoulders will tend to be easy and restful; held behind the back, it will be forceful and alert. Which to select will have to depend on the character of the sitter. The hand up to the face has a suggestion of thoughtfulness; but, if it is clumsily arranged, instead of thought it may hint at toothache.

While the square, straightforward view is not often pleasing-although sometimes it is quite the best—too much striving after effect must be avoided. If the shoulders are turned one way and the head the other, it must not be overdone, or a constrained effect will be obtained. It is an old and sound rule to let the eyes follow the head—that is to say, if the head is turned toward the right, the eyes should look a little more to the right, and vice versa. If the eyes are turned in the opposite direction to the head, the expression will be furtive and sly.

The lines of the figure may be emphasized or suppressed, according to circumstances. In the case of ladies with a natural grace, they may be accentuated by securing a contrast between the figure and the background. With men in ordinary, everyday costume, it is better to subdue them—by the use of a dark background for dark clothes, for example. But in other garments, such as military uniform, golfing or riding outfit, and so on, there may not be the

same need for suppression.

In three-quarter length and full-length portraits, the difficulties, as we have indicated, are greater. The lines of the arms and the position of the hands become of supreme importance. The hands, with dark clothes, are apt to come out as strong spots of high-lights, and the disposition of these spots in the picture space must be carefully thought out. If the lighting can be controlled so that the hands are much less illuminated than the face, so much the better. By bringing them together, we reduce the two light spots to one. By giving the hands something to do, we shall also simplify our task, as it is much easier then to get a natural pose. Nothing reveals the skill, or want of it, of the portrait worker so quickly as the way in which he deals with the hands.

Very often one sees a well-posed and well-arranged figure spoilt by strong contrasts in minor parts. The bars of a chair, for instance, may be quite dark and spots of a light back-ground show through them. The chair or other accessories must be kept accessory, and this can only be done by constant watchfulness in the

arranging.

The lines of the figure must be graceful or vigorous. With men, as a rule, the latter alternative must be chosen; but with the other sex, both the figure itself and its draperies often have a spontaneous grace which requires little or no arrangement, merely recognition. In a standing pose, the weight should not be distributed equally on both legs, if we aim at grace and ease, but thrown on one, the other leg being bent. The pose should not be one representing

a phase of movement, even if an animated result is our aim. If it is the result of a movement, the movement should be completed. For example, we might have such a pose as a seated figure, or a standing figure; but a figure caught in the act of getting up to greet a friend, however viva-cious and natural it seemed at first sight, would not be a lasting success. On the other hand, the moment after a movement is often the moment to expose; it is most likely to catch the figure in a lifelike attitude, and the draperies in lines they take naturally. Pulling about the draping to get some special effect is very apt to make the result look too formally arranged.

After all, the best posing is done, not by arranging at all, but by leaving the subject free to move about spontaneously, keeping a sharp lookout, and then, when the right moment seems to have come, asking that the pose may be kept for a moment. The best poses are seen, not arranged; and what we have to do is to learn

to see them.—Photography.

Studio Exposure

Correct exposure is one of the most important of the factors in making perfect photographs, yet the majority of portraitists approach it in the most casual manner, and apparently trust to a sort of sixth sense to tell them how long to keep the shutter open, or as one said to me, "It keep the shutter open, or as one said to me, is like taking a dive into water; when I press the bulb, I do not know when I am coming to the surface." With long practice it is possible to work successfully in this subconscious way, but most people will find it desirable to have some definite idea of the number of seconds necessary to give the exact quality of negative which is aimed at. I want you to take particular notice of those last words. There can be no fixed standard of exposure or density in portrait work, or we should all arrive at one monotonous style, without that touch of individualism which now distinguishes our best photographers from one another. Twenty or thirty years ago there was an established ideal of a clear, sparkling negative ranging from clear glass to opacity, and a high-class operator who did not conform to it had little chance of employment. Many negatives which would be appreciated today were then thrown aside as failures, because they were too soft or too hard to print in the limited range of media then available, but now we are more free to choose our methods, and can produce negatives to satisfy our own artistic instincts. Therefore it is necessary if we are to be consistently good in our work that we do not trust to "flukes" for successes, but study the conditions under which our particular class of negatives can be obtained.

On asking one of our best-known outdoor photographers how he secured such uniformly perfect negatives, I was told that they were obtained by "exposing to suit the developer."
This was in the pre-Watkins days, when no attempt had been made to systematize development and most people believed that the clever worker owed his success to modifying the developer according to the appearance of the image,

often beginning with plain pyro solution, and working up the negative by adding alkali and bromide drop by drop. This idea is now exploded, proving that my friend was a true prophet when he asserted that the prime factor in producing the negative was correct exposure. Hurter and Driffield, to whom photographers owe so much, have taught us that the amount of silver affected by light when a plate is exposed is in definite proportion to the length of exposure given, but this assumes that all the silver so affected is reduced by the developer, or, in other words, the plate is "developed right out," which is rarely the case in studio work, most portraitists finding that such a procedure produces too much This fact has been recognized by both plate and developer makers who prescribe different times of development for portrait, landscape and copy negatives, the former always being much shorter than the latter two.

To establish a correct method of exposure we must make a few experiments, working with a standard developer, and a fixed time of development, which may be obtained by the factorial system, the only variation being made in the exposure. It is convenient and economical, besides assuring uniformity of rapidity in the emulsion, to make several exposures on one plate, and this can easily be done in most studio cameras by fixing a small mask in the camera back and marking the slide so as to show when the plate is in position. The easiest size is to work three upon a half-plate, cutting a mask with opening two inches by four and fixing this in the existing carte or cabinet mask. If the slide has notches for single exposures, and also for repeating two C. D. V. on half-plate, the center notch may be used, but new marks a little farther from the center must be made for the two end exposures. For my own use I have made a repeating back which allows of four exposures, each three inches by two clear, from the rebate upon a half-plate, and this I find

handy for many other purposes.

The exposures, which must, of course, be upon the same subject, may be varied in any proportion which the operator desires. Usually double at each step will be found as good as any for portrait work, as our negatives will then show us the effect of one, two, four and eight seconds' The result will be rather surprising to those who try it for the first time; for, supposing that the one-second exposure gives a thin but printable negative, it will be found that the eight-seconds section, although thick and slow to print, will also yield a passable result. That, however, is not my point, which is that the operator should now select the exposure which gives him the quality of image he wants, or if none quite pleases him he should give an exposure between the two which he judges to be nearest correct. So far, good. Now all depends upon correctly estimating the value of the light, and this can better be done with an exposure meter than by the exercise of personal judgment. If we use an ordinary Bee meter and note the time taken to match the tint at the time of making our exposures we shall be able to establish a ratio between meter time and exposure for any light or lighting. For example, if we find that our

selected exposure is four seconds, and that it took eight minutes to get the tint, we have the proportion of half a second for each meter minute. Naturally I do not propose that anyone should make meter tests while a sitter waits, but an occasional test between whiles can easily be managed. The plate speed and lens aperture must be unchanged, or due allowance must be made, or this system will be worse than useless.

It is often found when strong effects of light and shade are being tried for that the negatives turn out hard and chalky and do not at all represent the model as seen by the artist. There are two causes of this, both closely connected, under-exposure and over-development, the latter being due to an attempt to force out shadow detail. Now, if development had been done by time without regard to the appearance of the image, we should have retained the detail in the high-lights, but the shadow detail would still have been wanting. Longer exposure would remedy this without giving flatness, unless quite an unreasonable time were given. This class of subject affords an excellent field for the progressive series of exposures already recommended or if it be thought that the effect cannot be judged from so small a plate two full-sized exposures may be made, one receiving three times as long as the other, both being developed for the same time in the same dish.

It is important when making experiments in exposure to keep not only to one make of plate, but to the same grade. Emulsions vary in character, and two grades which are, perhaps, marked 200 and 240 H and D, cannot be relied upon to give the same quality of image, even if the difference in speed be accurately allowed for; much more is this the case if two makes of plate be mixed up. For the same reason one developer should be adhered to, and for printing quality and adaptability to various subjects and lightings there is nothing to beat the old-established pyrosoda. Remember that a negative is only a means to an end, and that "pretty" negatives do not always give the best of prints. Although not strictly within my subject, I feel that at the present time of year it is not amiss to mention that pyro is less affected in its action by variations of temperature than most other developing I have only recently found the slow action of another developer mistaken for underexposure, with the result that the exposures were increased and flatness resulted.

A point which must not be missed is the effect of the distance between lens and sitter upon exposure. This is always allowed for in copying, but is often overlooked in portraiture. operators know that a large head requires more exposure than a full length, other things being equal, but perhaps could not tell you why. There are two reasons, one being the increase in the focal length of the lens as the sitter approaches the camera, and the other the flattening of the lighting by the greater amount of atmosphere which intervenes as the sitter is placed further from the camera. Let us consider the former case, assuming that a head measures 9 inches in height and we are making a 3-inch image of it; this adds one-third to the camera extension, supposing we are using an 18-inch lens working at f/6 for infinity; one-third added to the focal length gives us 24 inches—in other words, we are working at f/8, which requires practically double the exposure. When taking a full-length cabinet the reduction would be 1/12th, which would only add an inch and a half to the original focal length, and this we could safely ignore so far as exposure is concerned. In the second case the increase in exposure is only apparent, not real. If there is a certain amount of fog over the shadows it covers the bare glass, but there is no more detail in the shadows than there would be if the atmosphere were perfectly clear.

In conclusion, let me impress upon the novice that correct exposure is the key to satisfactory results. Leaving color effects out of the question, any arrangement of light and shade can be correctly reproduced if the proper exposure be given. We can flatten the scale by overexposure, we can sharpen it by underexposure, so that if we hit the happy mean we shall get upon our negative what we saw when looking at the sitter. Surely such a consummation is worth taking pains to attain, instead of following the usual "hit or miss" way.—Practicus in B. J.

Still Using Bows and Arrows

MANY years ago, before America was settled and for some time afterward, the Indian was able to secure all the game he wanted either for food or for clothing with his bow and arrows. When the white men first came to this country many of them became experts in the use of the bow and arrow and they could go out and kill game as wanted.

Recently, way up in the mountains of Tennessee, some hunters found a man still using a bow and arrow when going after game. When a small boy his grandfather had taught him to use them. He is now an old man and goes out with his bow and arrow for game at the present time.

We need not tell you the results; you know as well as we do that the men with the modern rifle or shotgun in the same country are going

to get all the game.

We do not need to go quite so far back in photography, but between 1850 and 1860 in most of the large cities photograph galleries were opened, making either daguerreotypes or tintypes, later on using the wet-plate process.

types, later on using the wet-plate process.

We still find some photographers who are trying to do some part of their photographic work with bows and arrows. It is true that they have purchased some new apparatus since the studio came into their hands. It is also true that the larger part of the apparatus in the studio is too old to be of any earthly use.

Sometimes a young man takes over or buys at a low price some old studio, thinking that he can work himself up, but no man of today can make a success by using bows and arrows. Neither can a man make a success of the photographic business by using tools of sixty, fifty or even twenty years ago.

Every photographer should make use of the tools which are up-to-date and which he can secure at the present time. We do not know of

any photographer who is trying to use a background that was used in the studio twenty-five or thirty years ago, but he thinks the camera and lens are still doing just as good work. Lenses will deteriorate with age, not rapidly but very slowly, but eventually they are not equal to and will not do the work of a new lens.

It is better for a young man to work for some other photographer until he has cash enough to buy an up-to-date studio or equip a studio with

up-to-date apparatus and tools.

Most studios are different from what they used to be; the photographer must do all kinds of work, especially in the small cities. If post-cards are demanded by the public he must make them and he must make small-sized photos as well as large ones, busts, standing figures and

groups.

And here is another thing, there is going to be a lot of copying done in this country during the next year or two. Our losses in the war were very small compared with other countries, but many of the boys who were killed over there or were taken sick and are still in hospitals, left only a small picture behind them. Someone is going to want a better and larger picture and you can give it to them if you have the right tools to make it. You can get a good price for this work; but no one can do this or any other photographic work and give satisfactory results with old, out-of-date and worn-out apparatus and lenses

Then there are studios in small towns which do amateur finishing, doing it at a disadvantage, trying to develop in trays, and, from what we can see, making very little money from this class of work if they figure their time worth anything. Amateur finishing is bound to interfere with the photographer if he has a good portrait business, but if he will put in tanks and the right equipment he can hire someone to do this work and still make a profit for himself. If he doesn't want to make this investment then he can send the work to some reliable finishing house and have the work done and get his percentage of profit for handling it, but he cannot do it at a profit unless he has the right apparatus to do it with.

Look over your studio from one end to the other. Throw out the "bows and arrows" and get good apparatus and you will soon see a big increase in your business.—Ohio Photo News.

Interpretive Photography

THE English professional photographer is generally satisfied by announcing that he takes

cabinet portraits at so much a dozen, and thinks there is nothing more to be said. But here is the trade advertisement of an American lady pro-fessional: "That Illusive Something, your psy-chological self. I shall not be satisfied unless you Nothing, you see, about portraits, sizes, or prices. You are to receive nothing short of your psychological self, however illusive it may or prices. be, and there is the mournful hint of the abject despair of the lady should she not succeed in satisfying you. Very different from the take-itor-leave-it bluntness of our own studio pro-prietor. He certainly fails to satisfy us, but in-stead of being abashed and humbled to the dust by his abject failure he jauntily gloats over it. Here is another lady's advertisement, shorter than the former, but equally suggestive of great things: "Interpretive Portraiture by Photogthings: "Interpretive Portraiture by Photography." It is just possible that the actual productions are no whit better than the usual thing over here, but that is not the point. We may, with good reason, glare with disgust at the batch of prints we receive, but we should surely regard them in a different light if we were assured that they are not the common or garden prints but genuine samples of Interpretive Portraiture. That makes a deal of difference.—THE WALRUS, Photography.

Success is Yours; but you Must Pay the Price

THESE questions are put, by an unknown author, to every seeker for success:

You want success. Are you willing to pay the

price for it?

How much discouragement can you stand?

How much bruising can you take?

How long can you hang on in the face of obstacles?

Have you the grit to try to do what others have failed to do?

Have you the nerve to attempt things that the average man would never dream of tackling?

Have you the persistence to keep on trying after repeated failures?

Can you cut out luxuries? Can you do without things that others consider necessities?

Can you go up against scepticism, ridicule,

friendly advice to quit, without flinching?
Can you keep your mind steadily on the single object you are pursuing, resisting all temptations

to divide your attention?

Are you strong on the finish as well as quick

at the start?

Success is sold in the open market. You can buy it—I can buy it—any man can buy it who is willing to pay the price for it.

HILE normal conditions have not yet been reached, a few foreign journals are finding their way to this country, and it is hoped, therefore, to continue this page more or less regularly.

Working Color-sensitive Plates

A. J. Bull, in a lecture before the R. P. S., draws an interesting sketch of panchromatism before 1906 and at the present day, pointing out that the ratio of the exposure for the blue, green and red respectively was 1:5:50; then in the year named the isocyanine dyes were introduced and the ratio of exposures has been reduced to practically 1:1:1, or when using the nitrogen Mazda lamps the exposure is actually less for the red than for the blue.

The lecturer had a quiet dig at those manufacturers who had introduced safe lights which give so little illumination that many workers, including myself, do not trouble to use them. He points out that, notwithstanding the increased orthochromatism, all these plates are far more sensitive to blue, without color filters, than to red, and that it is essential to damp down this extra blue sensitiveness by a filter, which is usually yellow, but to obtain really correct rendering of the colors it is necessary to make this filter with a trace of blue-green to reduce also the red.

Bull pats the British on the fact that they are now making Filter Yellow A to replace the well-known filter Yellow K of German pre-war origin, and gives the following directions for making a filter: "A piece of glass with a good surface is taken, cleaned thoroughly and the area measured, and then this is carefully levelled up and coated with a suitable quantity of gelatin containing the right amount of dye, so that when the filter is finished each sq. cm. of its area will contain the appropriate amount of yellow dye. One requires a soft gelatin, and 20 c.c. of the dyed gelatin may be coated on 100 sq. cm. of the plate. The drying should be under uniform conditions. That is necessary in order that a perfectly even film should be obtained, and then, provided that the glass has been thoroughly cleaned, the film can be lifted from the glass after cutting through the marginal portions with a sharp knife. In order to preserve the film it is usual to cement it between two pieces of glass of good optical quality with thin Canada balsam." -Phot. Journ., 1918, p. 266.

(It is an open secret that not only is a good "filter-yellow" being made in this country, but that also some of the sensitizing dyes are made here. Whether it will pay any manufacturer to continue this work, unless a really protective tariff be imposed, is quite another question. So far as I am aware this manufacture is now done by specific firms for their own use. Bull's suggestions for the coating of filters are sound, but (228)

I wonder why it is necessary to cast the film on one sheet of glass, then strip and cement between two others? Why not cast in the first place on one of the final glasses? The important points here are the use of soft gelatin, drying under uniform conditions, and let me add casting under uniform conditions. If the glass, dyed gelatin, and room temperature vary much as regards temperature, striæ or connection lines are bound to occur. In the face of the fact that filters with almost any desired absorption or transmission can be obtained commercially (from the Kodak Research Laboratory) it is very doubtful whether it pays to cast one's own filters, except for purely experimental work. In the discussion following his paper, Bull stated that balsam diluted with chloroform was good. I disagree with this. Chloroform is very apt to be decomposed by light, with the formation of an acid which causes bleaching of dyes. Xylol is decidedly preferable. -E. J. W.)

The Gum-bichromate Process with a New Colloid

H. S. STARNES describes his process for obtaining gum-bichromate prints, using gum Senegal instead of gum arabic as the colloid. To make the gum solution a quantity is suspended in a bag or wire cage, in a pint of water, and as it dissolves more is added until one fluidounce weighs 540 grains. Pigment is added to the solution together with the sensitizer which is a mixture of

Solution A Sodium bichromate . Water . 2 oz.

Solution B

1 oz.

Alum, sat. sol. Hydrochloric acid 120 minims Take one part of A to three parts of B.

Paper coated with the mixture is dried rapidly in front of the fire; then after exposure soaked for about one minute in cold water; then flooded with solution B diluted with fifteen times its volume of water, when the high-lights will begin to float away and development may be continued with a fine jet of water.

Starnes made the somewhat astounding statement that during exposure two actions went on simultaneously, a solubilizing and an insolubilizing action, and that it was possible to obtain a negative from a negative and then by longer exposure a positive; practically that there was a reversal of the light action.—Phot. Journ., 1918, p. 287.

(Senegal only differs from gum arabic in its greater content of arabin, 80 to 70 being the general proportions in the two gums, respectively.

If there is any superiority in the use of the Senegal gum one ought to ascribe it to this increased arabin content and obviously then using pure arabin, as Nelson K. Cherrill did in 1909, should be best of all. An explanation of the so-called reversal action is not obvious at first sight, and really the statement lacks confirmation. Arabin is really a potassium or calcium salt of arabinic acid, and the addition of an acid, such as hydrochloric, would set free the true organic acid, and, on the other hand, as alum is hydrolyzed on dissolving in water into alumina and sulphuric acid, one might get calcium sulphate formed and a compound of arabinic acid and alumina, and the solution would become thinner; on the other hand, one might have the setting free of enough sulphuric acid by the action of light to convert the arabin into cerasin or metagummic or metaarabinic acid, which is insoluble in water, and then some further action might occur by the light action on the bichromate which would account for the curious reversal.—E. J. W.)

Restoration of Light-fogged Plates

M. Tranchant revives the old process of restoring light-struck plates by immersing them in a solution of sulphuric acid, bromide and bichromate of potassium, then washing and drying. The time of immersion varies from three to ten minutes. Tranchant states that this increases the exposure about one-third or one-fourth.—Phot. Rev., 1919, p. 10.

(This solution will not keep, as bromide is gradually set free, and very rapidly on exposure to light, and the general experience is that the increase in exposure is about three or four times.

—E. J. W.)

Eastman Yellow

H. T. CLARKE has patented the preparation of filters with a new yellow dye, which is being introduced by the Kodak Company, under the above name. It is prepared from glucose by the action of phenyl-hydrozine-para-carboxylic acid, and treating the mixture with sodium carbonate, which forms a soda salt readily soluble in water but insoluble in alcohol.

The advantage of this dye is that it has a much sharper cut than the German-made filter yellow K, and almost as strong an absorption in the ultra-violet. The stability to light is satisfactory, as it requires weeks of exposure to direct sunlight to produce a change even in the light filters, which are being introduced as EK1 and EK2.—U. S. P. 1293039, 1919, B. J., p. 48, 19.

Platinotype Paper

M. VAN DEN BERGH gives the following formulas for preparing platinum papers:

F	or a	Co	ld I) eve	loţ	men	t
un	1	ch	lore	pla	tin	ite	
tio	n 1	to	6)	٠.			3.0 c.c.
e ol	i lea	ıd a	nd i	iron	SC	lu-	
							4.5 c.c.
						3 to	8.0 c.c
	un tio e ol	um tion 1 e of lea	um ch tion 1 to e of lead a	um chloro tion 1 to 6) of lead and	um chloropla tion 1 to 6) . e of lead and iron	um chloroplatin tion 1 to 6) e of lead and iron so	For a Cold Development um chloroplatinite tion 1 to 6) e of lead and iron solu-

This quantity is sufficient for eight sheets 18 x 24 cm. For very hard negatives the following should be used:

Chloroplatinite solution (1 to	
(1) -	2.5 c.c.
Oxalate of lead and iron solu-	
tion	2.5 c.c.
Sodium-ferric-oxalate solution	
(1 to 2)	2.0 c.c.
Water	2.5 c.c.
Sodium chlorophatinite solu-	
tion (1 to 10)	1 dro

The solutions may be brushed over the paper, which should be left until the surface moisture disappears and then rapidly dried at about 100°F. The best developer is—

Potassium	oxalate	(neutral)) 100 gm.
Potassium	phosphai	te .	. 50 gm.
Water .			1000 c.c.

For larger prints the developer may be applied with a brush, but for small work a dish with plenty of developer should be used and the print fully immersed.

For very brilliant prints the developer should be diluted with five or six times its volume of water and from 2 to 5 per cent. of a 1 per cent. solution of potassium bichromate added.

The above gives black or bluish-black prints. For brownish or sepia tones the following should be used:

Chloroplatinite solution	4.0 c.c.
Ferric oxalate solution	6.0 c.c.
Mercuric chloride solution (5	
per cent.) 0.2 to	1.0 c.c.
Sodium chloroplatinite (10	
per cent.)	2 dro
Water 2.0 to	4000

Increase in mercuric chloride increases the warmth of color.

The developer is-

Potassium oxalate .		100 gm.
Potassium phosphate		50 gm.
Citric acid		20 gm.
Potassium chloride .		10 gm
Water		1000 c.c.

Heat to about 155° F.—Bull. Assoc. Belge, 1914, p. 311.

(This issue of our esteemed Belgian journal covering from August to December, 1914, and has just reached this country.—Ed. Phot. Jour. Am.



An Appeal

Too Worthy a Cause to be Begged for '

Dear Fellow-photographer:

The letter which follows has just been received:

Chambre Syndicale Francaise de la Photographie

Paris, France, 7 February, 1919.

DEAR MR. MACDONALD:

The great war in which America joined us in the defence of civilization has ended by the victory of righteousness. But a great many members of our profession of the North and East of France (occupied by the enemy) have been ruined, their photographic implements taken off, and their houses destroyed.

In a general meeting our "Chambre Syndicale" decided, on the 9th of last January, to help our unfortunate fellow-photographers and to start a subscription with the object of collecting money

to this end.

May I trouble you in consideration of your well-known charitable feelings and request you to promote, if possible among our American fellow-photographers, a subscription, the proceeds of which would be a great assistance to our work?

Please accept my best wishes for all that you

will be able to do.

With the hope we shall soon meet again in Paris, believe me,

Yours faithfully,

L. VALLOIS, President.

The majority of these men have been serving with the French army—only to find that everything that they left at home is wiped out—no studio, no apparatus, and frequently no family—

nothing with which to resume life.

If we Americans don't help them there is no one who will—for there is no one else who can. British, Italians and French are equally impoverished, while we American photographers have made more money than ever before. Give something real, not just a little loose change as you would to a begger, but generously, as you would to a good old pal who had been hit—and hit hard.

I know the men at the head of the society, they are careful, conservative and level-headed. I will start the fund with five hundred dollars

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—you can send your checks to me—made out to me, and I will forward the whole sum by American Express, and publish the list.

This the first, and last and only call. It is too

worthy a cause to be begged for.

Cordially yours,
PIRIE MACDONALD,
576 Fifth Ave., New York City.

Portrait Photographs of the Peace Conference

The Harris-Ewing Photographic News Service is releasing for publication in April and May a complete set of portrait photographs of all the members of the Peace Conference who took their seats during President Wilson's first visit to Paris. The making of this set of original photographs is the biggest photographic "scoop" of the war, and one of the best picture features ever offered for publication.

All these photographs, seventy-three in number, were made by George W. Harris, president of Harris & Ewing, one of the best-known portrait photographers in the world. He went to Paris with the first press delegation from America and stayed until he had made an original negative of every delegate at the conference. No other photographer in the world has even attempted to secure such a collection. The many difficulties in the way of such a feat make its accomplishment a most unusual achievement.

This set of photographs published in a single layout or in a series of layouts not only constitutes a sensational news feature but records for permanent filing an epoch in the world's history. A newspaper or magazine in purchasing such a set of pictures is enriching its files with a collection which will be of value for years to come. The personnel of the conference is composed of leading statesmen from thirty nations, men who will figure frequently in the world's news for many months.

The quality of these photographs is far above that of the usual run of pictures offered for publication. Most of the pictures of foreign notables available in American are copies, the original negatives being on the other side. The Harris-Ewing negatives, films 8 x 10 inches in size, are in Washington. They are of the same quality which has created a demand for Harris-Ewing pictures the world over.

Attached to each photograph of the forty most prominent delegates is a brief biographical sketch. The name and position at home of the other delegates are all the data given. Besides the portraits there are two photographs of the conference room and a reproduction of the seating arrangement in the hall, with the name of each delegate on the seat he occupies.

Death of H. Essenhigh Corke

WE regret to record the death of Mr. Essenhigh Corke, the well-known professional photographer of Sevenoaks, England, which occurred on Monday, February 24, from pneumonia following influenza, at the early age of thirty-five. He He was a frequent exhibitor at the exhibitions of the Royal Photographic Society and the London Salon, where the high quality of his work was demonstrated by many fine examples. Mr. Corke was also a contributor to the English and American photographic press, his papers in this connection including several original ideas, some of which were specially applicable to amateur photography. We understand that Mr. Corke's sister will carry on the business with the help of a former assistant who was, until recently, a prisoner of war in Germany.

International Exhibition of Photography to be Held at the Canadian National Exhibition, Toronto, August 25 to September 6, 1919

BEING the Twenty-eighth Annual Exhibition of the Toronto Camera Club, organized, 1887, and incorporated, 1893, in affiliation with the Royal Photographic Society of Great Britain.

This exhibition, international in character, will be under the direction of the Toronto Camera Club and will be known as their Twenty-eighth Annual Exhibition. A cordial invitation is extended to pictorial photographers throughout

the world to submit prints.

The Canadian National Exhibition has the largest daily attendance of any annual exhibition in the British Empire, so that the pictorial photographer will have exceptional opportunity here for the display of his art.

For entry forms, etc., address A. S. Goss, cretary, Exhibition Committee, Toronto Secretary, Exhibition Committee, Toronto Camera Club, 2 Gould Street, Toronto, Canada. Entries close July 19, 1919.

Motion Pictures for You!

DURING the war our Government spent millions of dollars in making motion pictures, says the Outlook.

They cover our getting together at the country's call, the demand to produce and save, the rising to the need for health and morale, the building of emergency ships, docks, storehouses, railways, bridges, cars, locomotives, highways, motor trucks, telegraph and telephone lines.

The War Department alone has thousands of reels and hundreds of thousands of prints of motion pictures.

These pictures belong to the people. Nowadays a projection machine is hardly

more difficult to secure than is a sewing-machine. By means of a projection machine the Government's pictures may be brought to every university and college, and especially to every crossroad schoolhouse, and shown free to the people.

Hence the Director of the Division of Educational Extension of the Bureau of Education (which is in the Department of the Interior) invites everyone to help his Division in locating, first, places where motion pictures for educational purposes already exist, and, second, places where they do not already exist but where they may be shown.

In the first case, Mr. F. W. Reynolds, of the Visual Instruction Section in this Division, asks to have sent to him the name of whatever motionpicture projection machine his correspondent knows about, the name of the firm from whom it was secured, the seating capacity of the rooms or halls in which motion pictures have been shown, the total numbers in the schools or col-

leges near by, etc.

If there is no motion-picture projection machine, then answers are requested as to the seating capacity of a room or hall in which the pictures might be shown, the total number of pupils in available school or college, and other facts.

What do our readers think of this cooperative effort of the Government to bring its pictorial records to them? We believe that the Government will have a rousing response.

Aëro Photography

The photographs, made by aviators during Cantigny, Château-Thierry, Belleau Wood and other history-making battles, held thousands spell-bound, at the recent big aëro exposition in New York City. The gigantic "mosaic maps" by which territories covering hundreds of square miles were charted and accurately joined in a few hours by the new methods caused delight and wonder to the visitors at the aëronautical show.

The service men themselves, who aided so materially in the training of the army of ground and air photographers for the A. E. F., and who daily risked their lives, even at the training schools on this side of the "3000 miles," as well as over No Man's Land, see a tremendous future ahead of the aërial map-making and doubtless many of them will enter the field in commercial lines after they have doffed the khaki. They see a revolutionizing of many engineering and devel-opment methods not only in towns and cities, in the great Government works now planned as reconstruction work in America and Europe, but also in the lines of exploration and purely scientific advancement.

"The future of aërial photography for commerce and industry, as well as science, could not have been dreamed of before the war," says Capt. McKinney, "and every day new uses for it are developing. For example, the survey of an ordinary-sized town or of a great city with many hundreds of thousands of inhabitants can be accomplished just as accurately today by aërial mapping, and in a fraction of the time required by land survey as by the now 'oldfashioned' method of instrument survey on the ground. Street traffic, tall and small buildings and other obstacles in the way of rapid work on

the surface are eliminated, and the photographic maps are manifoldly truer in the multitude of

small details.

"A complete photographic map of Washington, D. C., now on exhibition here at the show, was made by me in one flight of two hours and a half duration. One hundred and forty plates covering the entire territory were exposed, and a squad of eight photographers, topographers and draftsmen only were needed to develop the photographs, enlarge them, put them together in mosaics, to complete a perfect photographic map of accurate scale by which the entire city is perfectly charted. The great mosaic not only shows the public buildings, streets and parks, but distinguishes correctly the minute details, such as trees and small structures which would require, for similar results, the work of scores of

surveyors and draftsmen a great many years!
"Another enormous aërial photo-map, about twenty feet long by seven feet in width, was made of the territory between Fort Sill and Wichita Falls, Okla., and is now on exhibition here. The territory covered in perfect photographic detail embraces 341 square miles and was made in 4200 exposures, in aërial flights

covering sixty hours.

"The work of the aërial cameras covers a district thirty-one miles long by eleven wide and accurately represents trees and bushes, gullies, creeks, roads and small trails, at a scale of 10,000 feet to the map foot. It would be ridiculous to endeavor to estimate offhand what such an undertaking on the ground would require in time and the number of operators. It is such a marvelous topographical record which can give the civilian an idea of how and why our artillery and infantry operations were performed with such accuracy and success during the closing periods of the war

"During the fighting an army of photographic experts trained at Rochester and other special schools were maintained in action near the front lines, and at the various headquarters. With previously determined 'base points' observation officers, supplied with smaller maps copied and reduced from the larger photographic ones,

directed all operations.

"These maps, both in America and in Europe, are another of America's scientific gifts of patriotism, equal in importance to the machine gun, the airplane and other marvels. An enormous output of cameras, film and plates, dark room necessities and printing machines was necessary to supply our army of millions, and another force of 'bench fighters' from one of the country's greatest photographic concerns was kept working on night and day shifts to supply

the 'trench fighters' over there.

"New models were constantly perfected and sent across, as the needs of the aerial observers changed with the rapid developments of the war. From the first models-ordinary high-speed cameras, perfectly adapted for terra firma work —the experts evolved the highest type, known in the army as the 'automatic K1' camera. Plates, which were heavy and breakable, required dark room loading and much manual manipulation—in the limited space of the aërial observer's position-were replaced in the latest design by

film rolls, such as used in fast hand cameras, in enormous rolls nine and a half inches wide and seventy-five feet long. The use of the film rolls made longer observation flights possible and performed the snapping of 100 exposures. They could be replenished in the camera, with the plane still in the air, even in daylight, giving the flyer almost unlimited opportunity to secure the pic-

tures he needed of terrain below.

"The latest camera used by our army is entirely automatic, and is operated by a small wind motor, which is started and stopped by the pilot-for with this remarkable instrument it is not necessary to have an observer along—a single seater being used. The time periods between exposures are regulated at will by the pilot, according to the altitude and speed of the plane, while accurate photographs are usually made on the film, far more sensitive than the human eye at from 6000 to 10,000 feet altitude. The camera is set in the body of the plane, 'shooting' through the 'floor,' as it were, where it cannot be observed, for the very important reason that were enemy planes to detect a plane using a camera they would concentrate their attacks upon it. Our war pictures show how accurate our American-made instrument is, and its excellence caused its adoption by our allies.

"But the war is won—and here comes in the peace problem. The direct commercial value of the camera of the Mark I type is the speed and accuracy with which it covers any and all kinds

of terrain in any and all climates.
"In forestry work aërial photographic maps will be of marvelous aid to the Government, and private developers of great tracts, now inaccessible and difficult of accurate survey, will find their work vastly simplified by the camera. Rail and wagon roads are not needed for this work, and a week's work in aërial mapping and mosaic making would net results ordinarily requiring years to obtain. Varieties of trees are clearly differentiated in the photographs. In the tropics, for instance, where mahogany is so difficult to locate in isolated sections, the peculiar texture and color of the foliage would be apparent in the aërial photographs and simplify the location of the valuable timber. Scrub lands, swamps. burned-out sections and districts where forest fires are in progress—with ordinary surface investigation impossible—all these are easily solved problems by the aerial mapping camera.

"Another great field is the photographing of

railroad linears, air pictures showing construction progress and simplifying the difficulties of the ground surveyor, even in such work as the re-cording and valuation of railroad properties. Map photos of great industrial plants for advertising photographs surpass the old-fashioned imaginative' drawings of the commercial artists.

"The charting of water areas, swamp lands, the changing of channels, the location of concealed rocks and shoals, of oyster beds-these are only a few of the marvels performed by the all-seeing aërial map camera, which in peace times can do its work only a short distance above

the ground if necessary.
"In Alaska, Africa, India, Siberia and South America air photographs of valuable and hitherto unexplored lands will microscopically record

every detail for study and development of their resources. And so certain is it that this new branch of the pictorial art has been simplified to the ease and accuracy with which an intelligent amateur can use his little hand kodak that companies devoted exclusively to aërial commercial photography will soon be organized for an entirely new American industry."

Death of Mr. G. Watmough Webster

It is with very much regret that we announce the death on March 22, from influenza and bronchitis, of Mr. G. Watmough Webster, at the age of seventy-six, at his home, West Kirby,

England.

In his death there passes away one of the few remaining photographers of the old school, men whose practice began within a few years of the discovery of the wet-collodion process, and who lived in the days when fortunes in photography were quickly made, and when every new method, such as those which are now the public property of the craft, were jealously guarded by their inventors.

Mr. Webster was known in this country through his many valuable contributions in the

photographic press.

Death of William Henry Rabe

It is with much regret that we learn of the death of Mr. W. H. Rabe, which took place at his home in Oakland, California, in January. Mr. Rabe was a prominent member of the group of keen pictorial photographers in California whose work has been a notable feature in exhibitions of photography during recent years, and many of our readers are familiar with his striking pictures through reproductions here in the photographic magazines.

Death of Mr. C. Welborne Piper

It is with very great feelings of regret that we announce the death, on March 4, at the age of fifty-five, of Mr. C. Welborne Piper, for a considerable number of years a member of the staff of the British Journal, and one of the leading investigators and writers who have taken the processes of photography as a field of study.

Educated for the profession of architect, in which he practiced for some years, a serious illness, when he was about thirty, left him in a state of delicate health, which forbade continuous or active occupation, and for the past five and twenty years, first in the home of his parents and latterly in the rooms which he occupied at the time of his death, he led the tepidly busy life consistent with the rather low measure of physical vitality which was his fate. Yet, despite this disability, he produced a very considerable volume of work in writing and experiment. For some years he worked with a brilliant friend, the late Douglas J. Carnegie, to the joint researches with whom the now widely used chromium intensifier is due. Piper himself is perhaps best known by his share in the invention of the Bromoil process. He worked out within a very short time the method by which the image of a bromide print can be converted into one retaining greasy

pigment in accordance with the strength of deposit, and the formulæ which he evolved at the outset long remained the standard method of carrying out the process. Among other researches in photographic chemical processes may be mentioned those on the rate of fixation, on the accelerating effects of additions to the hypo bath and on the fogging powers of developers, the latter carried out with Dr. Mees in the laboratories of Messrs. Wratten and Wainwright not long before that firm's amalgamation with the Kodak Co. These are but a few of the many minor processes of photography which he made the subject of experiment and in many of which he effected substantial improvements.

But Piper's chief interest lay in photographic optics, of which, though not a mathematician, he had a profound knowledge, and to which he made a number of contributions, for example, in the investigation of depths of focus, the design of depth scales, the correction of distortion caused by tilting the camera, and the design of apparatus for lens measurements. His "First Book of the Lens," written in 1901, is a treatise which, without the aid of higher mathematics, is the most complete account of the properties of photographic lenses which we have, though its title must have misled many a tyro in the

subject.

Of an intensely reserved disposition, Piper had few intimate friends, but for them no more loyal associate could be imagined. He was entirely destitute of what is commonly called "side, and even we, who, we think, have known him as intimately as anyone during the past ten years, are uncertain whether we have appraised his intellectual gifts as highly as they merited. But we deplore the loss of the most sincere of friends, and, for photography, regret the passing of one whose chief occupation in life was to extend the knowledge of its principles.—B. J.

Wireless Messages Photographed on Tape

Wireless messages can be received and recorded at a far greater speed and with further assurance of accuracy as a result of a new photographic device now being used by naval engineers at Otter Cliffs, near Bar Harbor, Me. The instrument is the invention of Charles A. Hoxie of this city, an engineer of the General Electric Company.

The invention permits the eye to supplement or replace the ear in reading wireless messages. In fact, a deaf man could be a wireless receiving

operator in a station so equipped.

The photographic recorder in operation at Bar Harbor has repeatedly recorded regular traffic schedules ranging from 1000 to 7000 words without interruption, and at a speed of forty to fifty-five words per minute every word is perfect and easily and quickly read. It is used supplementary to the ordinary type of receiving set.

Not only is the message permanently recorded on a tape of special photographic paper, but a fleeting visual image of the signals can be seen on the ground glass of the machine at the same instant that the electric impulses arrive from the antenna. And an audible reception can also be made simultaneously by the regular telephone method.

The mechanism is based on comparatively simple electrical engineering principles. A light-weight mirror "flutters" in electro-magnetic tune with the minute electric impulses coming from the receiving antenna. The duration and extent of the mirror's oscillations vary according to the dot, dash, or silence of the sending station. This mirror reflects a beam of light on the moving sensitized tape. This tape, propelled by an elec-tric motor progresses up and down through the vertical pipes which contain the developing and fixing chemicals. Automatically the tape enters the developing fluid and then the hypo fixing bath; then it is washed in running water and is dried by electric heat assisted by forced draft all invisibly effected inside this single machine. Like the tape from a stock-ticker, the message pours out into a basket. In rapid receiving there is an average of one word for every inch of tape. The receiving operators can read the record at a speed of 50 to 100 words per minute.

The time to record, develop, fix, wash, and dry the tape is from two to four minutes. The rolls of tape are 1000 feet long and a continuous message of 10,000 words can be recorded without

reloading the machine.

A recent performance of this machine promises

great things, as told by Mr. Hoxie:
"Two simultaneous messages from different sources were coming into one receiving circuit connected to the new photographic recorder," he said. "One of these messages was sent at a train frequency of 1000 cycles per second, and the other at 975 cycles per second. Ordinarily two frequencies so close to each other would have interfered with reception. By a slight adjustment of the machine I was able to receive both alternately without interference from the other. I hope to perfect the instrument so that in the not far distant future several photographic recorders can be attached to a single antenna and simultaneously receive and record messages from Rome, Lyons, Carnarvon (Wales), Nauen, Germany and San Francisco. This may be called simultaneous multiplex receiving from one antenna.'

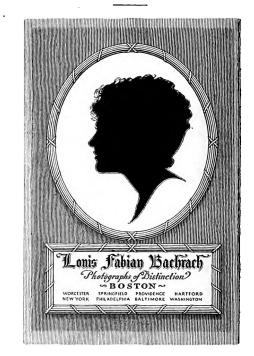
A Time Saver for Retouching

THE Gilbert Electric Retoucher is the invention of C. H. Gilbert, a practical high-class photographer of twenty-eight years' experience. Mr. Gilbert is ex-president of the Iowa Photographers' Association, a delegate to the National Congress of Photography in 1915, a member of the Photographers' Association of America since 1905 and of the North Central Photographers' Association since its organization. He has been a successful exhibitor at both National and State conventions, having won seven gold and three silver medals. His work has also won for him several magazine contests in art photography. In short, he understands his business and knows

Mr. Gilbert spent more than ten years in experimenting and developing this electric retoucher and has given it a thorough trial in his own studio. It has also been tried out and

pronounced quite "perfect" by scores of his professional friends and members of the craft.

These facts are mentioned merely to convince the skeptical that there is the authority of knowledge and experience back of this useful time- and labor-saving studio device.



A DESIGN BY GIBBS MASON FOR NEWSPAPER ADVERTISING REDUCED FROM PAGE SIZE. A GOOD EXAMPLE OF THE METHODS OF THIS PROGRESSIVE ESTABLISHMENT.

The Spring Trade

From all indications the spring trade this year is going to be better than for any year since the war broke out in Europe. People have money to spend and they are going to spend it. But naturally they expect to get something in return. In other words, if a retailer wants to sell things he has to have things to sell. You ought to be perfectly safe in stocking up a little more liberally than usual. Business unquestionably is going to be good .- Ohio Photo News.

Plates or Films

WE have heard no little discussion of the various merits and demerits of films and glass plates for professionals. The arguments have been quite sharp with unquestionably two sides to it.

The arguments put up by the advocates of the glass plates are, briefly: That the glass plates are easier to handle; that they are easier to retouch; that they are easier to print from; that while they take a little more room, they are easy to file and number; that they save time on account of being able to put them in the plate holders quicker and into developing racks easier; that present qualities of plates offer all of the latitude necessary for studio use in color values

For the films the arguments run: That there is a brilliance to film negatives not obtainable in plates; that the color value is truer; that there is more latitude; that the storing and filing of negatives is easier and does not consume as much room; that there is no danger of losing a valuable

negative by breakage.

The strongest argument in favor of the film is "quality." Even those who argue against it will acknowledge that it has quality. The manufacturers know about the complaints in regard to handling, and they have been busy devising ways and means of making the use of film easy, so that the average user can get this extra quality and escape the difficulties, and devices that have recently been offered show decided improvement over those provided but a few months ago. We believe that the handling devices are not fully perfected as yet, but that the conviction that the film has the quality in it will hasten along im-provements that will make them just as convenient to use as glass plates.

Any article with real merit is bound to become popular, but it is true that all improvements are rather crude at first and are developed into perfection rather than originated in the final form. Professional film had to overcome a prejudice, and if it were no better in quality than glass plates, it would have no chance whatever. reports of results obtained with films that glass plates did not, or could not, produce have convinced us that the professional photographers will seek that quality, and either put up with the faults or hold off until the more glaring defi-ciencies are overcome. When the automobile had only one or two cylinders and had to be cranked vigorously to be started, and had all kinds of nasty tricks, such as arm-breaking, going dead at a critical moment, getting there but not getting you back, it still held promise of such efficiency that it was persistently followed up. Improvements came rapidly, and now it is self-starting (no more broken arms) and instead of being a rarity, it is now the expected that it "gets you there and it gets you back." Will the film have the same history? It looks like it.—Trade News.

A New Printing Process

Mr. C. C. Conlee, 406 East First Street, Dayton, Ohio, has invented a new and inexpensive process for making a photographic reproduc-tion of any subject—photographic prints, maga-zine illustrations, lithographic copies, and almost any other class of printed or photographed mat-

ter without the aid of camera or plates.

The process consists of stripping down the original to the last layer of paper, which can be easily done by immersing the print in hot water for a few moments and then peeling off the sur-

plus paper by a gentle rubbing with the tips of the fingers, care being taken not to rub too hard. All of the better classes of paper and printed postcards consist of two or more layers of paper. After the original has been thoroughly stripped and dried, give a transparent coating to the original and allow same to dry. It is then ready for printing the paper negative. Two processes can be used to make the negative: (1) The stripping method, whereby the negative is printed on ordinary gelatin printing-out paper and stripped down to the emulsion by laying face down on a sheet of glass, after immersing for a few moments in hot water and manipulating the same as in the preparation of the original, and (2) the easier and more satisfactory method of sensitizing a sheet of glassine paper and printing the negative on that.

Spotting and retouching of the paper negative is a very easy matter on the paper negative.

The negative is now ready for printing, after a coat of transparent solution. It is best to place a thin sheet of celluloid between the negative and the paper to prevent the solution showing through on the finished print.

An Offer

Fredericksburg, Texas, April 9, 1919. Editor, Photographic Journal of America.

DEAR SIR: In support of Marguerite Baldwin's article in the March JOURNAL, I will add my testimony; for what I can do, others can also.

I have only one hand, and for several years I have been running a one-man shop, doing every job that comes along, and getting by with it.

If there is any way that I can help my un-fortunate brother I will only be too glad and willing to go the limit. Respectfully, R. L. RODMAN.

A Favoring Wind

An item appears in the current news which must be regarded as of unusual significance by every interested student of social and industrial The announcement that George conditions: Eastman, president of the Eastman Kodak Company, has made a gift of six million dollars' worth of common stock for the benefit of the employees who are old in point of service. This stock is not to be given outright to the men, but to be sold to them on easy payments at a nominal value of approximately one-sixth of its actual market worth, and the proceeds of the sale—about a million dollars-are to be devoted to the employees' welfare fund. Another fund of six million dollars' worth of common stock is to be set aside for similar disposal to the newer em-ployees in the future. Neither gift will interfere with the annual "wage dividends," which already amount to a total of a million a year.

ers, Pittsburg, Pa. 2d prize-Hughes Company, Baltimore, Md.

The Abel Cup (for employees)—Herbert G. Stokes, Pittsburg, Pa.

Bulletin of Photography Prize-R. W. John-

ston, Pittsburg, Pa.

Mr. Lanahan, of Pittsburg, gave the address of welcome, and Mr. J. B. Scott responded.

After the manufacturers and dealers were introduced the meeting was adjourned for luncheon, at which Mr. Schriever presided.

In the afternoon session Mr. Diehl introduced Mr. J. E. Mock, of Rochester, New York, who gave a good practical talk on general promotion.

Wednesday Morning Session, March 19, 1919

Mr. Diehl introduced Mr. Howard Beach, of Buffalo, New York, who gave an interesting talk on "Glints of Imagination."

Mr. Herbert G. Stokes, of Pittsburg, talked

on "Efficiency in the Work Room."

In the afternoon, at 2 P.M., Ladies' Session. Miss Emme Gerhard, of St. Louis, Mo., gave a Demonstration and talk.

Miss Della B. Hayes, of Butler, Pa., addressed the ladies on "Child Portraiture."

In the evening at 7 o'clock, the Fourth Annual Banquet was held. There was an enormous crowd in attendance, and much fun and hilarity. Mr. Paul True was the toastmaster. interesting speakers were heard, including Rev. Dr. Beetham, whose talk on "The Yanks at Château-Thierry" was appreciated by every one. Captain Cooper had some stories to tell, and Mr. Pirie MacDonald, of New York, addressed the guests in serious vein.

Mr. and Mrs. Diehl were presented with sterling silver flat ware, in appreciation by their many friends. The presentation speech was delivered by Mr. C. O. Towles, who immediately prior to this had been presented with a watch

fob from his many Pittsburg friends.

Thursday Morning Session, March 20, 1919

Mr. Clifford Norton, of Cleveland, Ohio, who is quite an authority on home portraiture, delivered an address, and then made several negatives, illustrating his speech.

The New Officers for 1919-20

President-J. B. Schriever, Scranton, Pa. Vice-President—J. W. Scott, Baltimore, Md. Secretary—G. J. Kossuth, Wheeling, W. Va. Treasurer—W. J. Goldman, Reading, Pa. State Vice-Presidents: O. C. Henry, Pennsyl-

vania; G. H. Walters, New Jersey; N. Levisohn, Maryland; J. Sherrill Ellis, Delaware; W. H. Towles, District of Columbia; W. R. Hook, West Virginia; I. W. Cole, Virginia; L. L. Higgason, North Carolina; W. D. Clark, South Carolina.

The prizes were presented to the winners by Mr. Howard D. Beach, of Buffalo, New York.

The North Central Convention, Fort Dodge, Iowa, October 1, 2, and 3

THE executive board of the North Central Photographers' Association met at the Wahkonsa Hotel, Fort Dodge, Iowa, January 28.

There were present, Hal Egbert, President; J. R. Snow, First Vice-President; R. J. Zwiefel, Treasurer; H. E. Voiland, H. O. Baldwin. The resignation of H. W. Flint, Secretary, was

read and accepted.

The appointment of H. O. Baldwin, by the President, to fill the vacancy was approved by

the Board.

The 1919 Convention is to be held in Fort Dodge, with the Wahkonsa Hotel as headquarters, which will afford ample room for the entertainment of the Convention. There are a large Convention Hall, Ball-room, and Dining-room, on the fifth floor, where all the meetings will be held.

Fort Dodge is in the North Center of the State, ninety miles north of Des Moines, one hundred and ninety-six miles south of the Twin Cities. The officers are already working on the program and promise to beat the successful St. Paul

Convention of last year.

The Association will buy up to ten best pictures for the Salon, at ten dollars each. To be selected

by popular vote of the Convenion.
Send all dues to R. J. Zwiefel, Treasurer,

Duluth, Minnesot a.

New members, \$2.00. Those who paid last

Address all communication to the Secretary. H. O. Baldwin, Fort Dodge, Iowa.

Professional Photographers' Society of New Hampshire

THE third annual meeting of the Professional Photographers' Society of New Hampshire was held at the Lindsey Studio, Manchester, March

18 and 19.

All the members of the official board of the New England Association of Professional Photographers, including First Vice-President A. K. Peterson, of Hartford, Conn.; Second Vice-President W. H. Manahan, and Treasurer Eu-gene A. Holden, of Boston, attended the event.

The program included a business meeting; a "Skylight Demonstration," by Charles Nelson, of Brooklyn, N. Y.; a talk on "Studio System," by L. B. Painting, of Concord; a photographic paper demonstration by the Eastman Kodak

Company's representative, and an informal discussion, "The Question Box."

Many of the western and middle States are now organized, but New Hampshire is the first New England State to boast a photographic

The following officers were elected: Claude Powers, of Claremont, President; F. B. Wilson, of Laconia, Vice-President; George Perry, of Concord, Secretary and Treasurer.

The New England photographers Board of Directors met in conjunction with the New Hamp-shire association and filled vacancies by electing William H. Manahan, of Hillsboro, President, and William Noetzel, of Newton, Mass., Second Vice-President. Demonstrations were made by Mr. Noetzel, John Sabine, of Providence; F. D. Burt, of Pittsfield, Mass., and Louis Oliver, of Providence. At the closing session it was voted to meet next year in the Kimball Studio, Concord.



The WORKROOM

ONTAINING THE LATEST PROCESSES, FORMULAE AND APPLIANCES NEEDFUL IN THE ART OF PHOTOGRAPHY FOR THE OPERATOR & WORKER

A New Formula for Tank Development
Substitutes for Platinum
The Gum-bichromate Process with a New Colloid
A New Photographic Transfer Process
Dark Slides Out of Register
Acid Hypo
A Method of Making Slides Direct from Diagrams
Added Clouds in Bromide and Gaslight Prints
A High Standard White Marking Fluid
How to Mix Developers
Relieving Black Backgrounds
The Expert Retouching of the Negative
An Imbibition Screen Plate Color Process
Replies and Queries



THE WORKROOM

By the Head Operator



A New Formula for Tank Development

THE scarcity of elon and metol has made it advisable to find a substitute formula for tank development of portrait film. The following pyro-soda formula, based upon the use of a neutral sulphite obtained by the combination of sulphite of soda and sodium bisulphite, gives excellent results.

Formula.

Pyro		oz. and	
Sulphite of soda .	6	oz. and	175 gr.
Sodium bisulphite	$1\frac{1}{2}$	oz.	
Carbonate of soda	2	oz.	
Potassium iodide .	5	gr.	
Water up to	1	gal.	

The following instructions *must* be strictly followed, as the keeping qualities of this developer depend entirely upon the method of preparation.

Dissolve the sulphite first, in one quart of hot but not boiling water. When dissolved, add the bisulphite and then *boil* the solution for five minutes. Cool to about 70° F. and add the pyro.

Dissolve the carbonate in one pint of warm

water, then add the iodide.

Pour these two solutions into the tank and make up to one gallon of water.

make up to one gallon of water.

The most satisfactory temperature for developing is 65° F. The solution should not be used below 60°.

When the developer is first made and used, the developing time at 65° F. is about eighteen

This made-up developing solution may be kept in the developing box, but when not in use, it should be covered to prevent evaporation and deterioration. A floating cover of wood made to fit inside the top of the box is recommended.

After the developer has been used for several batches of films, it will be necessary to strengthen it with the addition of each new batch. The strengthening solution is made by dissolving the chemicals named in the following formula and using exactly the same methods for preparing it as when preparing the first developer.

Strengthening Bath Formula

Pyro	1	oz.
Sulphite of soda .	1	oz. and 150 gr.
Sodium bisulphite	150	gr.
Carbonate of soda	3	oz. and 50 gr.
Potassium iodide .	4	gr.
Water up to	60	oz.

Add this to the developing solution in tank as needed, to keep up the developing strength of the solution.

Fixing Bath Formula

				Α					
Water .									96 oz.
Нуро .									2 lb.
Sulphite	of so	da							2 oz.
				В					
Water .									32 oz.
Chrome	alum								2 oz.
Sulphur	ic acid	1, C	:. P						₹ oz.
Pour B	soluti	ion	int	οА	slo	wly	y w	hile	stirring
rapidly.						•			-

A fresh bath should be prepared daily, as the gelatin-coated backs of the films are likely to become stained in an old or discolored fixing solution.

After fixing, remove film to another large tray for washing. To wash thoroughly, they should be handled in the same manner as when developing and fixing. Ten minutes' constant handling in running water is sufficient to eliminate every trace of hypo. When washed, lay films on a piece of wet glass and swab them, face and back, with a tuft of wet cotton, then rinse them under the tap before hanging them up to dry.

Provide a number of wooden spring clips and attach one of these to each film, by an edge or corner, and suspend them from a line. Each film should be hung separately and sufficiently far apart to prevent contact. Do not reverse the films once they have begun to drain, as the water running back will form "tear drops" which may cause spots if allowed to stand. The place selected for drying the films should be clean and

free from dust.

A slight tendency of the films to curl when dry may be overcome by placing them under weight for a few hours, when they may be removed and will then remain flat.

Substitutes for Platinum

The question of substitutes for platinum has received almost world-wide attention, many nations having been obliged to devise something. Most of the platinum came from Russia before the war. Germany was no exception. Some of the recent substitutes are enumerated in a German paper. The most important seems to be that suggested by Gotthold Fuchs, consisting of a wolfram-gold-nickel alloy which can be cast, forged and rolled, is of a light color and polishes brightly, which platinum does not. Another substitute is an alloy of silver, wolfram and nickel. Both these alloys are stated to be acid resisting. A nickel-iron alloy, known as platinit, is said to be serviceable as a substitute for platinum in glow lamps, its coëfficient of extension being similar to that of glass. For laboratory

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purposes an alloy of nickel and chromium affords a platinum substitute for wire and sheets, but cobalt alloys, such as cobalt-iron and cobaltchromium, are as serviceable, especially for acid-

resisting purposes.

According to the *Chemiker Zeitung*, Professor Gewecks of Bonn University, who has been experimenting to find a substitute for the platinum dishes weighing from 30 to 40 grams, which are used as cathodes in analysis by electricity has found that glass dishes silver-plated inside can be used to great advantage. In order to make the silver coating adhere properly to the inside of the glass its surface is first sand-blasted, by which a better result is obtained than by the use of hydrofluoric acid. The dishes must be thoroughly cleaned, first with chromic acid, then with soda solution, and finally with nitric acid, before the first silver-plating. An ammoniated solution of silver nitrate, reduced by the addition of two com. of 40 per cent. formalin solution, is the most suitable vehicle for plating. At a maximum temperature of 30° a deep blue silver precipitate of from 0.03 to 0.15 gram is obtained in three or four minutes. The dish, previously dried, is provided with a strip of platinum sheet 2 mm. wide; one end must touch the silver coating, while the other end is bent over the rim and attached with a screw.

The Gum Bichromate Process with a New Colloid

[THE following is the extended account, as published in the Journal of the Royal Photographic Society, of the experiments made by H. S. Starnes and the subject of the paper read by him some time ago before the Society. Mr. Starnes, it will be seen, employs, instead of gum arabic, gum senegal and prepares this latter gum

upon the paper in an acid condition.]

He considered that the bichromate printing process was an ideal one, for the following reasons: (1) There is an almost unlimited range of colors; (2) if suitable pigments are used there is no doubt about their permanence; (3) there are no such things as double tones; (4) there can be the same surface of paper as in an engraving. On the other hand, the gum bichromate process will not give the same fineness of grain that a silver print does, but except for small portraits the grain will probably be fine enough.

In all types of bichromate printing the principal difficulty is in removing only the soluble parts not acted upon by light. In Sir Joseph Swan's original carbon process the film of gelatin and pigment was transferred to a temporary support and the soluble matter was washed away from the back quite satisfactorily, but it required double transfer and warm water. Then came the Artigue process, which did away with the double transfer, but had to be developed with wet sawdust, and frequently the lighter detail would not stand the friction, and was washed away.

Shortly after the advent of the Artigue process the lecturer worked out a process which Sir Joseph Swan told him was the first real advance in bichromate printing since the original patent. The exposed print was soaked in water for a

minute or two and laid face upward on a piece of glass, a piece of dry blotting paper was laid over it, and a soft clothes brush was brushed over the back. The soluble part of the film was taken up by the blotting paper, and the insoluble portions forming the image, especially the lighter tints, were pressed down into closer contact with the paper support. Sir William Abney had suggested to him that possibly that method of development might give a suitable grain for process work. The lecturer had no experience of process work, but was pleased to pass on the suggestion to anyone who could make use of it. Although the blotting paper preserved the light detail, still the lecturer had the same trouble as those who tried to revive Pouncey's method of printing very deeply and removing the soluble portions with a wet brush—there was no dependence on the condition and solubility of the gum arabic.

When the bichromate printer was an artist he could remove what he liked and leave what he pleased, but the ordinary worker lacking that ability was likely to give the process up in despair. He felt, however, that there was something in the process if he could get a more suitable colloid than gum arabic. He had gradually worked his formula down to the point that to get the best results the paper must be coated so thinly that one minim of the combined mixture of water, gum, pigment and bichromate must cover four square inches of surface. The brush, the sawdust, and the nozzle of the garden hose were all too brutal in removing the pigment, and blotting paper was too expensive. After experiments, he came to the conclusion that a straight tube about 3 inches in length, with a bore about the same as in a tobacco pipe, and fitted to the domestic water tap, answered well, as the force of the abrasion could be controlled by varying the supply of water. When he wished to con-centrate the action of the water upon small areas he used smaller nozzles, which fitted over the first one. There was then pleasure and interest in working on every square inch of the picture.

In searching for a suitable paper he discarded most of those used by the bichromate printers for one reason or another. Cartridge paper and the cheaper drawing papers allowed the coating to sink in unequally. Whatman's paper, in addition to being expensive, allowed the pigment to sink in to some extent, which, although just what the water-color painter wanted to prevent washing up, was not the property wanted when using the bichromated solution. Some pre-war note-papers were better, and he found a paper used in collotype printing which was at first excellent, but later samples were of inferior quality. He was now using a foreign paper which the paper solves are present would send and would send a paper and a paper a obtained from Spicer Bros., and would send a sample to anyone who sent a stamped directed envelope to him at King Henry's Road, Lewes. Some of the pigments he had tried contained a proportion of dye, which stained the paper.

Messrs. Brooke, Simpson, and Spiller had made him a stock of suitable pigments. He used a carbon black modified with blues, browns, or reds, as required.

He found that refined sodium bichromate worked better than the other bichromates, and got a good sample from J. J. Griffin, Ltd. The stock he has was made in Germany, but he hoped that English firms would now make it.

hoped that English firms would now make it.

Nine-tenths of the trouble in bichromate printing arose from the varying characteristics and conditions of the colloids used. The conditions in which gum arabic is collected and stored make it hopeless for the purpose. He found that he might get passable results with it from one negative, yet could do nothing at all when working from another, even though the paper in use was cut from the same coated sheet. The

problem had bothered him for years.

He had to make a rather startling statement, which was that under certain conditions the action of light makes a bichromated colloid soluble instead of insoluble. This would explain why the readings of the actinometer were not always reliable, and why one type of negative would give better results than another. The action seemed to be as follows: When the bichromate is added to the colloid it renders the latter more or less insoluble at once. On exposure to light it slowly becomes quite soluble, and after it has reached that stage it begins to get insoluble as under normal conditions. Different samples of gum work differently with regard to the length of time for those two actions to take place. Freshly-made solutions are more prone to act so than solutions that have been kept for some time

At first he thought that different samples differed as slow and rapid plates do; then he found that there must be two actions going on simultaneously, because the parts of the print under the densest parts of the negative were darker than under the half-tones, while under the lightest (or clear glass) parts of the negative the prints seemed to print normally, but not with the density that the amount of pigment ought to have given; so evidently some of the gum was not holding the pigment on to the paper. One day he got a print that had a black sky. The trees in the distance looked as though they were covered with snow, and the shadows, which ought to have been the darkest parts of the print, were simply half-tones. That print gave him a clue to the mystery. He showed a print which at the first stage of exposure was a negative from a negative; another showed the two actions going on simultaneously during the same exposure to light, and another which had first gradually been rendered soluble until, by the time it was soluble under the densest part of the negative, the other parts had again become insoluble in their proper sequence, and it was becoming a practically normal print. He was inclined to think that the first stage was purely a physical one, that the bichromate had bound up the colloid too tightly, and that the first thing the light had to do was to unfasten the straps, if he might use that phrase.

About thirty years ago he had written an article for the British Journal of Photography in which he gave a somewhat similar explanation of

the action of light on a dry plate.

He had searched through many books on bichromate printing to see if a double light action of this kind had been observed, but no one seemed to have noted the phenomenon. The matter was one of considerable importance, as it accounted for a very common fault in prints. It was often found that bichromate prints break down in the rendering of the lightest tints, because under the densest part of the negative the film, instead of being made insoluble for the lightest tints of the print, would be undergoing just the reverse action, and would be made even more soluble, and would wash away more easily, so that it appeared as though the print had been underexposed. The lecturer had made many experiments in the hope of finding some method of keeping the film of bichromated pigment soluble, so that the light action should be restricted to its legitimate function of insolubilizing it according to the gradation of the negative. It was not until he had worked out the following formula that he began to see daylight:

Sodium bichromate . . . 1 oz Water 2 oz

Alum, saturated solution . 4 oz. Hydrochloric acid . . . 2 drams

Take one part of A to three parts of B. If with a certain sample of gum this makes the film too soluble, then reduce the amount of B.

Having found gum arabic to be unsuitable, he had tried a number of other colloids, and finally hit upon gum senegal. As an adhesive it was probably not satisfactory, but for printing purposes it works much better than gum arabic, being softer, less brittle, and more under control. It contains 81 per cent. of arabin, as against 70

per cent. in gum arabic.

To make the gum solution a quantity of it is suspended in a bag or wire cage in 1 pint of water, and as it dissolves more is added until 1 fluid-ounce weighs 9 drams. To measure the pigment a salt spoon is used which will hold just 20 minims of water, and four spoonfuls of the pigment (strike measure) are taken; the precise quantity may vary according to the covering power of the color, and is ground up with 1 dram of methylated spirit. This is added to 1½ drams of water, mixed thoroughly, and placed in a test-tube to settle for a few minutes. One and a half drams of the gum solution are taken, and to it are added about three-fourths of the pigment solution, care being taken not to shake up the coarse sediment at the bottom of the test-tube, and the whole is mixed well together. The pigment that had settled at the bottom of the test-tube should be reground and added to the mixture. To that is added 1 dram of the sensitizing solution, consisting of 15 minims of solution A and 45 minims of solution B. In winter, solution A may be increased to 20 minims. The quantities given will coat about twelve pieces of paper 10 in. x

To coat the paper it should be fastened by one corner to a sheet of glass or zinc, supported if necessary on a wooden board, which in turn rests upon a penny laid on the table, so that the device may be revolved easily in any direction. A spoonful (20 minims) of the mixture is poured along the length of the paper from left to right

at about 1 inch from the edge. The color should be spread evenly over the paper with a 2-inch varnish brush with light strokes, turning the turntable as required, but always keeping the brush flatwise on the paper. If the brush is turned edgewise streaks will appear. With a little practice it will be found quite easy to coat 4 square inches of paper with 1 minim of the mixture.

The coated paper should be placed about 2 feet from a fire or gas stove, and by the time the second piece of paper is coated the first will be dry. After use the brush should be cleansed with water and a nail-brush and dried thoroughly before it is again used.

The exposure is about one-eighth of that required by P. O. P., and is gauged by an actino-

meter.

For development the print is soaked in water for about a minute and then flooded with solution B (acid alum) 1 dram, water 2 ounces. the exposure has been correct the color in the high-lights will be seen to float away in a few seconds. The print is then put on a glass easel in the sink and development completed with the aid of the rubber tube and nozzle device previously described. More control over the print is obtained by giving a longer exposure and by using the acid alum solution in a stronger condi-

A New Photographic Transfer Process

[THE following account of the demonstration at the Royal Photographic Society by Messrs. Middleton and Kent, of the Kerotype Company, of the newly-introduced stripping bromide paper which now appears in the Society's journal, supplements in some respects that which we gave

at the time.]

MR. MIDDLETON, before proceeding to the demonstration, said that some years ago, while conducting experiments in three-color photography, Mr. Kent and he found, as others had done, that the great problem was the combining of the three constituent images in correct register. They had also desired to obtain the constituent images by dye-toning a silver one, and so avoid the necessity of printing in daylight. This necessitated the use of a transferred image, and as the carbon process could only be printed by daylight and was otherwise unsuitable, while the other transfer papers, though permitting of the use of artificial light, were somewhat troublesome, uncertain, and limited in their application, they were obliged to devise a new one.

The bulk of the processes involving the use of transfer and stripping films were devised to avoid the use of glass for negative purposes. The parent of them all for preparing the positive was the collodion process of transfer, which was introduced about 1857. In this the image was prepared by the wet-plate process on a waxed plate, transfer being subsequently effected on to gelatin paper. The converse of this, i. e., coating the collodion on to waxed paper and subsequently transferring on to gelatin glass for negative purposes, was suggested by Laboureux in 1878, and in succeeding years many suggestions for a stripping paper were made. In some cases

the paper was waxed, in others coated with rubber and other resinous and resinoid materials. Sometimes solvents (aqueous and others) were necessary for release; in other cases the film became detached in the developer or automatically on drying. The underlying idea was to obtain at the finish a gelatin image detached, so as to form in itself the printing negative. Only one of these processes, the Eastman and Walker "Transferotype," survived to this day.

The ideal transfer process, to which none of these others approximated, should be one in which (1) the support was textureless and translucent, so that printing-through should be possible without much loss of detail or prolonged exposure; (2) the support was little affected by damp, so that register might be possible of one image on another and yet sufficiently porous to permit of the use of aqueous adhesives to transfer on to non-porous surfaces; (3) the support was without tendency to tear, and sufficiently plastic to admit of transfer on to domed or curved surfaces; (4) the emulsion parted with facility when transferred, and was yet so adherent that there was no danger of frilling or blistering in development or of self-stripping when stored; (5) the prints when made would be ca able of being kept before transference for as long a period as might be necessary; and (6) double transfer on to any surface was simple and easy, so as to avoid lateral reversal, which could not be escaped unless "printing-through" was adopted.

A long series of experiments had convinced them that paper impregnated with paraffin wax most nearly fulfilled the first three of these conditions, and they subsequently devised a substratum consisting of a powdery nitrocellulose deposited from an aqueous etheral alcoholic solution, and this enabled any sensitive gelatinous material to be coated thereon, thereby satisfying the three latter conditions. The full details were disclosed in their patent No. 12,091 of 1915. The paper was prepared continuously, i. e., it was put in as a reel of ordinary plain photographic paper, passed through a trough full of hot wax, and after buffing or calendaring in order to lay the hairs down again while the wax was still warm, was coated with the substratum. This passed through a heated chamber, where the air was exhausted, and was finally coated with ordinary photographic emulsion in a coating

Mr. Middleton here showed examples of the paper at various stages—plain, waxed, coated with substratum, and coated with emulsion. He said that this paper would be found to have many applications, many novel effects being possible by its use, and the process of so transferring photographs would appeal to everyone owing to its simplicity, ease and certainty in application, the large variety of surfaces, both as to texture and form, upon which the transfer could successfully be made, and the pleasing nature of the results. In addition, many novel color toning effects were obtainable, owing to the nature of the support and the fact that this formed no part of the final print.

The paper was treated exactly as ordinary bromide paper, but in order to avoid lateral reversal on transfer it was necessary to place the paper in the frame with its waxed support next the negative, so that the printing took place through the support. The translucency and absence of texture in the support were such that the loss of quality was not unpleasing, but should this slight loss be objected to, and non-reversed transfers without such "printing-through" be required, it was necessary either to print in an enlarging lantern, placing the negative with the image toward the light, or, in the case of film negatives, to reverse the negative in the frame so that the celluloid was next to the sensitive side of the paper, or to resort to double transfer, which he would presently describe.

Kerotype paper, as it was called, was made in three degrees of speed: Slow bromide for contact prints, rapid bromide for enlargements, and gaslight. The printing, exposing, and developing of the paper differed in no way from that of ordinary bromide or gaslight, and as to washing, owing to the impervious and temporary nature of the support, seven minutes in running-water would be found ample to ensure permanency. Care should be taken to see that the prints did not lie closely on one another, if the washing was so restricted. Mr. Middleton here passed round some Kerotype prints and enlargements, and also

some strippers with which he demonstrated the pulling off of one or two enlargements.

He then proceeded to show how such prints were transferred on to diverse surfaces. For the large majority of such surfaces all that was necessary for single transfer was a 5 per cent. solution of soft gelatin. For all surfaces which were not cockled or spoiled by damp, he simply wetted the Kerotype print thoroughly, placed a pool of the lukewarm gelatin solution—say, 90° or 95° F. in the center of the surface to which transfer was to be effected, laid print in contact, lightly squeegeed, and left under pressure between blotting paper for a few minutes and placed to dry. In this fashion he made transfers successively on carbon transfer paper, on wood, on metal and on porcelain, which last, having a domed surface, required a little extra patience in manipulation. In cases where the surfaces would be spoiled by damp, such, for example, as thin plain paper, vellum, satin, and so forth, the procedure was slightly different. In this case it was advisable to make up the gelatin solution with a considerable proportion of alcohol therein and to add a modicum of golden syrup or glycerin. It was used just as in the other cases. He proceeded to demonstrate the adaptability of the process, thus modified, to these surfaces, and succeeded in transferring a number of examples, which were passed round among the audience by Mr. Kent.

Coming to double transfer, Mr. Middleton said that this was very little more trouble than single. Two methods were available, one for use on surfaces impervious to moisture, and the other for use on pervious surfaces. In the latter case a piece of paper was smeared with a resinoid solution of rubber and dammar, or rubber, dammar and elemi in xylol. The solvent was allowed to dry, then the paper immersed in water with the print, squeegeed together, and left under pressure for a while, and hung up to dry. After dry-

ing, the original support was removed, the surface moistened with ether-alcohol to remove traces of wax, etc., and plunged into water until the greasiness disappeared. It could then be transferred on to any surface by means of a gelatinous adhesive, but, of course, if the support was not pervious to moisture the gelatin could never dry. After drying, the temporary support was released by xylol.

For impervious surfaces another procedure was necessary, based on one first suggested by Lumière in his three-color process. Here the print, hardened with alum, was either coated thickly with soft gelatin solution or squeegeed into contact with paper coated with such solution, and allowed to dry, after which the waxed paper was removed, the print moistened with ether-alcohol, and wetted and squeegeed into contact with the impervious or other surface which

tact with the impervious or other surface which had been previously coated with gelatin containing chrome alum. He showed an example of this method, in which the transfer had been made

on an opal surface.

After pointing out that in order to finish the prints a vigorous rub with cotton wool or a little wax in turpentine would be found to deepen the shadows, Mr. Middleton concluded with a few words about failures. If the print was squeegeed into contact with too much force or if it was attempted to remove the print before it was quite dry, the wax paper would not leave cleanly, but it would be found that vigorous friction with a rag soaked in xylol would remove the portions remaining behind without danger to the film. Occasionally, again, either through careless manipulation or the presence of too much air in the water, air was enclosed beneath the print, and in this case steaming was the remedy. In any case this was useful when the surface was desired less matt.

Brief questions put by various members elicited the following additional information:

The prints were all toned before being transferred. The process was not intended for threecolor work. Experiments had been made in this direction, and as a paper could not be obtained which was satisfactory for the purpose intended, the present one was evolved. They had abandoned for the present the attempt to get proper colors by toning. It was not very suitable for enlarging negatives, as when transferred on to glass it left a considerable grain. The prints could be transferred on to drawing paper by this method, in the way recommended for transferring to satin. Damping the drawing paper could be carried out in the ordinary way with gelatin. The gelatin was put in the middle, contact was made, and after a light application of the squeegee it was allowed to dry. The gelatin should be used very weak, a considerable quantity being left on, so that it could "pool down" into the pits of the paper. The transferring could be done on to a very rough paper. There would be no objection to pigmenting by this method, as in the bromide process, but probably it would be necessary to pigment before transferring. This new paper would keep well; some had been kept quite good for four years before printing. The prices were the same as for bromide.—B. J.

Dark Slides Out of Register

In three out of four studios that I have visited in the course of the last year or so, I found the dark-slides of the camera in general use out of register with the focussing screen. The present use of rapid plates enables the photographer to use diaphragms to an extent that disguises considerably the want of fine definition, resulting from the plate not being truly in focus. In the days of wet collodion, when, in order to secure a portrait free from the unsharpness, due to movement of the sitter, it was the custom to use the lens at full aperture or nearly so, photographers had to be, and were, careful to see that their dark-slides were truly in register with the focussing screen.

Although the want of sharpness in the negative, due to the slides not being in true register, is less conspicuous when using the smaller apertures to which the use of rapid plates has accustomed us, it is still very desirable that the coincidence of position of the plate and the focussing screen should be as complete as possible if only for the power obtained to get properly exposed results with the shortest exposures, particularly in the case of portraits of children. A photographer, the proprietor of a high-class establishment, doing a large business, writes me that since the correction of his slides his operator generally takes portraits of children with the open lens with excellent results, and with fewer failures and consequent economy of time and plates.

The plan which I employ to ascertain the truth, or want of it, of the registry of the slides, is to take a strip of wood about $\frac{3}{8}$ or $\frac{1}{2}$ of an inch in thickness, rather longer than the width of the slide, and to drive a screw through it. The strip is laid across the front of the frame of the focussing screen, and the screw advanced until the point just touches the screen itself. A plate is now put in the dark-slide, the back is buttoned down, and the shutter is drawn. The strip is then laid across the front of the slide, and if it is in true register, the screw point will just touch the plate. It is desirable to repeat this trial with the plate placed both vertically and horizontally, and with each carrier that may be in use with the slide. A waste negative is better than a plain glass for the purpose, as a faint scratch on the film will indicate very closely a coincidence of the two surfaces.

The reason for having the wood a little longer than the width of the slide is (as I have found in one or two cases) that the top or bottom or one of the sides may be higher or lower than the opposite side, and the extra length of the wood allows the screw to be tried on different parts of the plate. The screw is inserted at the place where it will come over the middle of the screen when one of the ends of the wood is just at the outer edge of the frame. This arrangement allows full use to be made of the extra length of wood for testing the truth of adjustment away from the center of the screen. The extent of deviation from coincidence is ascertained by placing slips of card of different thicknesses between the point of the screw and the focussing screen, or the plate, as the case may be, until a

piece is found of a thickness that just fills the

If it is the focussing screen that is found to be nearer to the front than the plate, a cardboard matt is cut of the same size outside as the ground glass; about a quarter of an inch wide all round except at the corners, where it is rounded inside for strength. A photographer generally has a stock of old mounts of various thicknesses, but if there is not one of just the thickness required, one or more thicknesses of cartridge paper may be pasted on to a thinner card, and when dry used for the purpose. The card matt is dropped into the frame, and the glass replaced and the slip-beading pinned in again.

If it is the plate that is too near the front, slips of card are glued on all round to the rabbet of the dark-slide. It may be that some of the carriers may require adjustment independent of what has been done to the dark-slides. In this case they may be trued by gluing slips of card along the edges of the front, or, if the error is in the other direction, by reducing the thickness of the wood in the same place.

Of course, a neater job may be made by sending the slide and frame of the focussing screen to a camera maker or to an intelligent cabinet maker, if (which is not often the case) the camera can be put out of use for the time, but the home cure method described has answered perfectly well.—W. E. DEBENHAM, in B. J.

Acid Hypo

THE user of the development processes of printing generally has an acid solution of hypo for fixing. The advantages of such a solution are: (1) The developing action is stopped practically the instant that the print is put in the hypo; there is therefore no increase in density after leaving the developer. (2) All risk of developer stains is eliminated. (3) If alum and sulphite are used they act as hardening agents, in which case prints may be toned by the hotbath hypo-alum process. (4) The bath does not stain as a partially exhausted plain hypo bath will do.

The chief disadvantage is that the bath does not discolor, and so there is a temptation to use it too long, *i. e.*, after it has largely lost its fixing powers.

A choice of formulæ is given:

Water

Г	No. 1			
Hyposulphite of s				4 oz.
Metabisulphite of	soda			$\frac{1}{2}$ oz.
Water	•	•	•	20 oz.
	No. 2			
Sodium sulphite				4 oz.
Sulphuric acid .				1 oz.

Dissolve the sulphite in the water, and then add the acid very slowly with constant stirring. An ounce of this solution to a pint of normal hypo solution is enough.

20 oz.

	N	o. 3	;			
Sodium sulphite	,					2 oz.
Citric acid						½ oz.
Dissolve sulphite						-
Hot water .						8 oz.
Add the acid, and	add	mi	xtu	re t	o	
Нуро						8 oz.
Water				-	·	32 oz.
	-	-	-	-		
	N	o. 4	Ļ			
(A) Sodium sul	phi	te				½ oz.
Tartaric ac						¼ oz.
Water .						3 oz.
(B) Hypo .						6 oz.
Water .						32 oz.
Add (A) to (B) an	ıd fi	lter				
• • • • •		_				
		o. 5	•			
Sodium sulphite						l oz.
Glacial acetic ac	cid					$1\frac{1}{2}$ oz.
Alum					-	1 oz.
Hot water .						10 oz.

The sodium sulphite may be dissolved in about 3 ounces of water, and the acetic acid added. The alum is dissolved in the 10 ounces of water, and when quite cold is mixed with the sulphite solution. Proportion: 1 ounce of No. 5 to 10 ounces normal hypo solution.—Photography.

A Method of Making Slides Direct from Diagrams

HAVING to make a number of lantern slides from diagrams in black ink on white card, in which it was desirable that the lines on the slides should also be black on white and not vice versa, it occurred to me that a great deal of time and trouble could be saved by the adoption of a direct reversal process, getting a positive image in the

camera straightway.

After a few preliminary experiments the following procedure was found to give quite satisfactory results: The exposures were made on fine grain slow plates, backed, so as to secure a good clean image. Exposure must be on the full side, and development is carried as far as it will go. The plate when developed should present almost as black an appearance at the back as it does at the front. The fact that the image appears quite buried in the film and almost invisible does not matter in the least. When development is complete the plate is not fixed, but is rinsed in two or three changes of water and placed in a 5 per cent. solution of ammonium persulphate. From this stage everything can be done in white light.

It will be seen that the developed image gradually dissolves away in the persulphate, leaving what are black lines in the drawing represented by white lines of silver bromide on the plate. It is unwise to hurry this part of the process, as it is important to dissolve out all the developed image. From ten minutes to a quarter of an hour is generally sufficient, but no harm results from leaving the plates in longer than this. They are then transferred to plain water.

It may be that the image is then sufficiently dense in its white form to be used as it is, in which case nothing remains to be done but to wash the plate for five or ten minutes, dry it and

bind it up. But if a stronger image is required, it is easily obtained by placing the plate after washing in a little fresh developer, which may be often of the same composition as that first used. In this the white image speedily darkens, and when it has gone far enough the plate is washed and dried. There is no need for fixing in hypo at any stage. If it is used after the second development it will be found to weaken the image a great deal, unless the development has been carried very far indeed.

No doubt there are other chemicals which can be used to dissolve away the developed image, leaving the unaltered bromide behind; but, having persulphate available, and finding that it worked perfectly for the purpose, I have not

tried them.

Lantern slides made in this way more than a year ago, and which have since been exhibited many times in a powerful lecture-theatre lantern with arc light, are still in good condition, so that there need be no qualms on the point of permanency.—C. WRIGHT, in *Pholography*.

Added Clouds in Bromide and Gaslight Prints

Bromide printers are rather in the habit of meeting the difficulties, real or imaginary, of printing in clouds on developing papers by "looking them boldly in the face and passing on to the next business," the result being that many prints which would have been greatly improved by the addition of a suitable sky are sent out with a monotonous expanse of white or gray paper unrelieved by a cloud or even a graduated tint. The operation, although requiring a fair amount of dexterity and carefulness, is really not difficult, and should not be shirked by anyone who aspires to be considered as an expert printer.

Naturally the first requisite is a supply of suitable cloud negatives, which may be home-made or may be purchased at most photographic dealers. If home-made they may be made upon ordinary glass plates, or, what is preferable, upon celluloid film, the kind supplied in film packs answering well for small sizes, while the thicker quality, such as Kodak Portrait Film, does well for larger ones. Whichever support be used the emulsion should be orthochromatic, as the work of cloud photography is much facilitated if a fairly deep yellow screen be employed. The advantage of thin celluloid as a support is that it permits of the sky being printed in with the light falling from either side, as may be required by the lighting of the landscape with which it is to be combined. The commercial cloud negatives are almost invariably carbon prints upon a thin film, either of collodion or gelatin, and are used in exactly the same way as if they were original negatives. Waxed paper negatives were, and perhaps still are, on the market, and while they answer fairly well for printing out, are not so well adapted for our special purpose as those upon a transparent base.

Cloud negatives should invariably be larger than the size of print for which they are to be used, as not only does this give the printer a chance to improve the composition or balance of his picture by placing a cloud mass in the right place, but it also avoids the monotony of seeing the same cloud repeated in picture after picture, which, in vulgar parlance, "gives away the show every time." I remember many years ago seeing at an important exhibition a frame containing a series of twelve excellent prints taken many miles away from each other, in eleven of which the same sky appeared; the twelfth was blank. The large negatives naturally demand a large printing frame, and it is advisable to have this a size larger even than the largest cloud negative, so that, if necessary, a part of the print may project beyond the bottom of the negative. This is, however, not an essential, but may be convenient. The great difference between "clouding" a P. O. P. print and one on bromide paper is that in the first case the already printed image is visible, so that adjustment and shading are easy: in the other that it is invisible, so that some means of registration is necessary. The method to be adopted will greatly depend upon the number of prints required from one negative, and we will, therefore, first deal with cases in

which only a few copies are required. The first thing to be done is to make the requisite number of prints with plain skies, the negative having either been shaded or blocked out, so that the sky portion is practically opaque. Any-thing in the nature of a hard outline must be avoided, so that blocking out on the film side with color is usually unsuitable, especially with foliage. I have found the best plan to be to cover the back of the negative with tracing paper and to stump round as close as possible to the outline with black lead or chalk. About an inch in breadth may be done in this way, and the remainder covered with opaque paper, although a better job is made by stumping all over. A trial exposure should be made to see that the blocking out is satisfactory. When making the prints, the negative should be pressed well down into one corner of the frame, and the bromide paper fitted close into the same corner, so that all the prints will have the subject in exactly the same position, a pencil cross being made in this corner on each copy, so as to show the "right way up" for the second printing. A thin piece of white paper of exactly the size of the prints should then be placed in the same corner, and a bold outline of the upper part of the view traced upon it with a soft pencil. This must be done in the frame, which may be placed on an ordinary retouching desk. This tracing is then used as a guide for placing and shading on the cloud negative. Here the masking need not be done with so much care, as it is better for the cloud to overlap a little rather than to run the risk of a white halo between the sky and the trees or buildings, as the case may be. When all is ready, register marks must be made, so that the prints will occupy the same position as the tracing, and the second exposures made. All negatives will not, however, require such elaborate treatment. In many cases simple vignetting with a card cut roughly to the outline of the subject tacked across the printing frame, with a strip of cotton wool tucked underneath the edge to soften the shadow, will answer every purpose. Of course, the counterpart of the card must be used to shade the print in the same way when under the cloud negative. Even with this, however, some means of securing registration must be adopted.

Negatives having thin skies which print through to a decided gray may often have the clouds added by the simple expedient of putting the cloud film negative behind the subject and printing the whole in one exposure. In such cases the cloud negative must be quite clear at the lower portion, and this is best done by placing a card inside the camera, so as to cut off all light from the lower half of the plate. This method is only applicable to subjects with a fairly straight sky line, and cannot be used where buildings or trees project to any considerable distance.

If a large number of prints are required it is advisable to proceed as when adding a sky to a lantern slide via the cover glass. To do this the sky of the original negative is reduced to the desired extent by means of a strong ferricyanide reducer applied with a brush. A special cloud negative of the same size is made, and the image dissolved away from any portions which would interfere with the subject. The two plates are then bound together and printed in the ordinary

way.

For machine printing, where a single negative only can be used, the method employed is very simple. A print is made on glossy P. O. P., and a cloud printed in in the ordinary way. Without a cloud printed in in the ordinary way. toning, a fresh negative is made from this print, and this is ready for use without further trouble. It has been asserted that satisfactory combination negatives can be made from two films, fitting the cloud and subject together and cutting through the two with a sharp pair of scissors, discarding the unwanted portions; but I have never succeeded in doing this without showing the line of junction. It is, however, quite practicable to strip a film negative with hydrofluoric acid and to float it on to a negative having a thin sky. In this case, as in other superpositive methods, the sky negative must be quite transparent where it covers the subject. It should be remembered that in all cases the sky must be lighter near the subject than it is at the top edge of the picture, and means should be provided for securing this effect, if necessary, by giving a little more exposure to the upper portion of the sky.

So much for legitimate methods—if the addition of clouds at all is legitimate; some say it is not. There are other ways, which necessitate a very little artistic skill on the part of the operator. Excellent clouds can be stumped upon tracing paper stretched upon the back of the negative, using a genuine cloud negative as a guide; otherwise your clouds are apt to look rather lumpy. An air-brush is also a very useful tool for making faked skies upon fairly large negatives, using an opaque color. The dodge of working upon the glass side of a negative with an air-brush while the glass is decidedly warm is not so generally known as it should be. The heat dries the color as quickly as it goes on, and prevents it from running into blots. Even a fairly thick sky can be printed through if the lower part of the negative be shaded or covered with tissue, so as to slow it down to the exposure necessary for the sky.—

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A High Standard White Marking Fluid for the Photographer

PHOTOGRAPHERS have numerous calls for the use of a good white marking fluid, and to the many inquiries we are pleased to recommend Johnston's "Snow White." We have given this water-color a thorough test and have found it without exception the most reliable water-color fluid on the market for the use of photographers. A trial will convince.

How to Mix Developers

A DEVELOPER usually contains four solid ingredients:

(a) The developing agent.

(b) The alkali.(c) The preservative.(d) The restrainer.

On adding a solution of alkali to a developing agent the solution very rapidly turns dark brown

owing to oxidation.

If we add a little sodium bisulphate to this brown colored solution the brown color, or stain, is bleached out and a colorless solution is obtained. Therefore, if the preservative is first added to the developer, on adding the alkali the solution remains perfectly clear because the sulphite preserves or protects the developing agent from oxidation by the air.

As a general rule, therefore, the preservative

should be dissolved first.

An apparent exception to this rule should be made when dissolving elon in concentrated solution, since this developing substance is insoluble in a strong solution of sodium sulphite, while if a sulphite solution is added to a strong solution of the developing agent a white precipitate is formed. When once the elon is dissolved, however, it takes a fairly high concentration of sulphite to bring it out of solution again, though only a low concentration is required to prevent the elon from dissolving.

On this account some direction sheets recommend that the elon should be dissolved first, though if water containing dissolved air is used the elon may oxidize and only a small amount of oxidation product is necessary to cause chemical fog. Therefore when dissolving elon, dissolve a portion of the sulphite first, sufficient to prevent the immediate oxidation and yet not enough to prevent the elon from dissolving readily, then dissolve the elon and finally add

the remainder of the sulphite.

The alkali (say carbonate) may then be added

(a) Dissolve the carbonate separately and is danger, however, of the elon precipitating out before the carbonate is added.

b) After dissolving a portion of the sulphite and adding the elon, dissolve the remainder of the sulphite and carbonate together, cool and

add to the elon-sulphite mixture.

The above procedure is necessary so that when the carbonate is added the solutions are cool. If a hot carbonate solution is added to the developing agent, even in the presence of the preservative, some substance is formed which produces chemical fog.

In the case of developers containing no bromide, used for testing the quality of plates and for developing underexposed negatives, it is absolutely necessary to mix the developer with cold water if a minimum of fog is desired.

In the case of some samples of paramidophenol which are discolored by the presence of oxidation products, these may be partially removed by boiling after adding to the sulphite solution. In this way the oxidation products are reduced back again by the sulphite to paramidophenol, though the solution should be cooled again before adding the carbonate. If pure chemicals are used such a procedure is, of course, entirely unnecessary.

Bromides and iodides are added to a developer to compensate for any chemical fog produced by the developer, or inherent in the emulsion. It is immaterial at what stage the bromide is added

during mixing.

When mixing a developer the following rules

should therefore be followed:

1. Dissolve the preservative first. In the case of elon dissolve only a portion of the sulphite first, dissolve the elon, and then add the remainder of the sulphite.

2. Make sure that one chemical is dissolved before adding the next. If the alkali is added before the crystals of the developing agent are dissolved, each crystal becomes oxidized at the surface and the resulting solution will give fog.

3. Mix the developer at as low a temperature as

possible.

4. In the case of desiccated chemicals, like sodium carbonate and sodium sulphite, add the chemical to the water and not vice versa.

Two practical methods of mixing are possible,

as follows:

(a) Dissolve all the chemicals in one bottle or vessel by adding the solid chemicals to the water in the correct order. For example, to mix the following formula, proceed as follows:

Sodium sulphite .		2 oz.
Elon		150 gr.
Hydroquinone		75 gr.
Sodium carbonate.		2 oz.
Potassium bromide		25 gr.
Water to		32 oz.

Dissolve about 4 ounce of the sulphite in about 20 ounces of warm water and then dissolve the Now dissolve the remainder of the sulphite and then the hydroquinone. Finally add the carbonate and bromide and dilute to 32 ounces.

For large quantities the filter bag method should be used, the chemicals being placed in the

bag and dissolved in the above order.

(b) An alternative method is to dissolve the preservative and developing agent in one vessel and the carbonate and bromide in another, cool and mix. This method is the safest and best for quantity production.

For example, to mix the following motion-

picture developer, proceed as follows:

Sodium sulphite			4 lb.
Hydroquinone			13 oz.
Sodium carbonate	е.		4 lb.
Potassium bromio	ie		3 oz.
Water to			10 gal.

Dissolve the sulphite in about 1 gallon of hot water, then dissolve the hydroquinone and filter into the tank. Then add 1 gallon of cold water to the tank, dissolve the sodium carbonate and bromide in 1 gallon of hot water and filter this into the tank, immediately adding cold water up to 10 gallons. The object of adding cold water to the tank before adding the carbonate is to cool off the solution before the carbonate

The extent to which a developer may be concentrated is determined by the solubility of the least soluble constituent, because a stock solution should usually withstand cooling to 40° F. without any of the ingredients crystallizing out. Usually, the hydroquinone and elon come out of solution on cooling, but by adding alcohol (grain, wood, or denatured) up to a concentration of 10 per cent, the crystallization is prevented, since the developing agents are very soluble in alcohol.

The addition of the alcohol does not prevent the other ingredients, such as sodium sulphite, from crystallizing out; in fact, the alcohol diminishes their solubility and therefore increases the

tendency to come out of solution.

paramidophenol-carbonate developer is difficult to prepare in concentrated form, though by adding a little caustic soda the solubility of the paramidophenol is increased and a stronger solution can be thus prepared.

When preparing concentrated developers it is important to observe carefully the rules of mixing, taking care to keep the temperature of the solution as low as possible if a colorless developer is to

be obtained.

A two-solution developer is simply a onesolution developer split into two parts, one containing the carbonate and bromide, the other containing the developing agent and preservative, so that the developer will oxidize less readily and therefore keep well. The reason why it is customary to keep a developer like pyro in twosolutions is because pyro oxidizes much more readily than elon or paramidophenol with a given amount of preservative.

For purposes of mixing, only one-solution developers need be considered, because the same rules regarding mixing apply in both cases.

Developing Troubles

In order to be able to explain the reason for any particular developer trouble it is necessary to understand thoroughly what takes place when the ingredients are mixed in the wrong order or if any ingredient is omitted from the formula, and also the effect of chemical impurities. It is impossible to indicate every possible trouble, but the more important ones may be listed as

1. The developer gives fog or chemical fog. Fog is the chief trouble, caused by faulty mixing. It may be due to any one of the following reasons: Violation of the rules of mixing, mixing the solution too hot, omission of the bromide, addition of too much carbonate or too little sulphite, the use of impure chemicals, etc.

2. The solution is colored. As a general rule the developer when mixed should be colorless, and if colored the developer should be suspected as being liable to give fog. In the case of a pyro developer mixed with bisulphite which contains iron, the iron combines with the pyro to form an inky substance which imparts a dirty red color to the solution.

If a pyro developer is mixed as two separate solutions, A and B, the B solution, which usually contains only carbonate and bromide, should be perfectly colorless, though if carelessly mixed in dirty vessels it may be colored brown by the presence of a little Pyro A.

3. If the solution does not develop, then either the developing agent or the carbonate was omitted during mixing.—Photo Digest.

Relieving Black Backgrounds

A METHOD of relieving black backgrounds and improving atmosphere in the prints, which I recently worked out, has proved so satisfactory in a number of cases that I am pleased to pass it along to the readers of the JOURNAL. My idea was to change the solid black ground to one of a neutral tint, imitating a portrait made against a background of cloister-cloth.

A piece of ground glass the size of the negative, a piece of linen cloth, preferably of medium-coarse weave, and a little crayon-sauce are the requirements. The crayon-sauce may be purchased at any art dealer's; it comes in small sticks, which are easily crushed into a powder. The ground-glass may be purchased or it may be made quite quickly and easily in the studio. Old negative glass makes excellent ground-glass for background purposes, because it is free from the irregularities usually found in ordinary glass. This may be rapidly ground with fine carborun-dum dust and water. The carborundum dust is put up in one-pound cans and is sold by most hardware dealers and garages. It is put up in various degrees of fineness. I use No. 30, which is very fine and produces a very even and fine-grained surface on the glass. Glass 5 x 7 or smaller is best made by rubbing two sheets of glass together with the carborundum and water between. Both surfaces of the glasses are ground at the same time and the process is surprisingly quick. Larger sizes require rubbing with a smaller glass object. The bottom of an ink-bottle or the flat surface of a glass bottle-stopper are excellent for this purpose. Occasional rinsing under the tap is necessary in order to locate the places that have not been sufficiently ground.

Having supplied the ground-glass it should be thoroughly cleaned. I give it a slight scrubbing with a handbrush onto which I have shaken a little Dutch Cleanser or Sunbright; thoroughly rinse it under the tap and wipe it dry with a clean towel, being careful not to touch the ground surface with the finger-tips. The crayon sometimes refuses to adhere to the ground-glass where the fingers have touched it, due no doubt to slight traces of oil. The cleaning process described is especially useful in using ground-glass that has been previously used for background work. Lay the negative down on a flat table on a sheet of white paper, emulsion side up, and place the ground-glass over it. It is sometimes convenient to hold the two in register by using some pushpins around the edges, or they may be clamped into a printing frame together, backed with the white paper. The crayon is rubbed into the ground-glass over the background area of the negative, and the object of keeping the two glasses in register is to avoid getting the crayon on portions over the image. I have found it much easier to use a little precaution here than to remove the smudge from over the image later and it makes a much cleaner job. Another good method is to place the negative on the printing machine, and by the aid of the transmitted light outline the image on a piece of white paper with a heavy soft pencil or crayon, and use this paper as a guide for applying the crayon-sauce.

The crayon-sauce may usually be applied with a tuft of cotton, and the quantity adhering to the ground-glass regulated somewhat by the degree of pressure while rubbing. It is best to rub with long, firm strokes. If not enough crayon adheres to the glass or if you wish to accentuate the light in places more crayon can be made to adhere by applying with the dry finger-tips. If a little chalk or talcum powder is added to the crayon it will work smoother but less of it will

adhere to the glass.

When the desired coating of the crayon has been rubbed into the ground-glass, blow away the loose particles and proceed with the next opera-

tion as follows:

Take a piece of linen cloth as described above, cut a little larger than the ground-glass. Lay it in water until thoroughly wet. Then place it between two blotters and roll well with a print roller. The cloth when removed from between the blotters should be quite damp, but not wet, and should be flat and smooth. Now lay the cloth carefully over the prepared ground-glass, smooth it out gently with the palm of the hand and then roll it down with the print roller, increasing the pressure until quite firm. Lift the cloth away from the glass and the background negative is ready for use. In making the prints the effect of the linen fiber may be increased by removing the diffusing screen from the printing machine. The effect is very pleasing and well worth the trouble of making the experiment.— Carl Hugo Stempel.

The Expert Retouching of the Negative

THE ever-changing conditions and improvements in portrait photography, with the higher prices now prevailing in the profession, put upon the progressive photographer the duty of giving due consideration to every element entering into the quality of his work.

In any proper consideration of quality in the portrait, more than ordinary stress must be placed upon the modelling and retouching of the negative. Not always, however, does this detail receive the attention it deserves. In many portrait studios we find most expert operators—men skilled in producing artistic effects in the posing and lighting of the subject. Such studios

usually employ careful and clever dark room men, and printers who are masters in their profession. But the really expert retoucher is more rare and difficult to find than the clever operator, dark room worker or printer; and yet the most artistically lighted portrait and the perfect negative will fail to carry the likeness and charm of the sitter's personality without the aid of the expert retoucher, who really knows what the negative needs in the way of retouching and improving. For which plain reason, much of the good work done in the professional ganeries of the highest class is made null and void—lost for the lack of the necessary skill and care in the retouching department. Those who are familiar with the work of our leading portraitists will not attempt to gainsay the facts as here set forth.

It is because of the importance of what has been said above that we venture to call attention to a new patent device, the Artograph Screen, recently introduced by an expert retoucher who has had experience in some of the leading studios of this country and Europe. By the intelligent use of this screen, after giving the portrait negative merely the usual proof retouching, it is now possible for the photographer to give his portraits that stipple effect and natural modelling, a finish hitherto obtainable only at the hands of

the most expert negative retoucher.

It is generally recognized in the profession that this fine stipple effect represents the highest skill of the retoucher. The Artograph Screen produces an exact facsimile of the stipple, blending and modelling the shadows into the highlights in an inimitable way, so that the natural modelling and likeness in the subject are scrupulously preserved, while the touch and finish of

the expert retoucher are reproduced.

It is a fact that the Artograph Screen does this without any special skill or labor on the part of the photographer, which makes me bold to bring this device before the profession. In our opinion it is one of the most useful advances in professional photography in the last few years. So perfectly does the screen do its work that its makers offer one hundred dollars to the expert negative retoucher who can equal the stipple effect given by the Artograph Screen in fineness, smoothness and regularity.

An Imbibition Screen-plate Color Process

A RECENT patent specification, No. 121,776, of Hans Pedersen, describes a method of making color prints by a process which combines within itself certain details familiar in other processes.

In reciting the known state of the art in the field of his invention the patentee points out that it has been proposed to produce from a color diapositive, i.e., a three-color original positive, for example, an autochrome plate, another similarly colored positive view or picture on paper, by using the same method that has proved so successful with plates, that is to say, to expose a sensitized bromide film beneath a positive, comprising a screen of primary colors, to develop and then reverse and fix it. However, to enable the light to reach the eye from such a picture

so as to reveal the colors, the light would have to pass twice through the screen or filter, and would thereby be weakened so far as to render the picture seen by the eye, to be lacking in contrast, thus making this method impracticable.

He also points out that, by another known method, a positive reproduction can be had direct from a multi-color diapositive by first producing a print therefrom on pigment paper coated with a white pigment and transferring the pigment image on to a black paper backing, then placing a colored layer in correct register on the pigment coating and allowing the picture to imbibe colors, so that there is obtained a positive picture with correct distribution of light and shade.

According to the improved method the required colors are imbited from a multi-colored substratum layer or screen, and for this purpose a transparent base is covered with a screen of not too small meshes and of waterproof colors, which are only soluble in alcohol, for example. Directly on this filter is placed a sufficiently thick gelatinsilver color-sensitive film, having white pigment incorporated in it. The subsequently mentioned separate treatments are based on well-known general treatments or methods, to which reference

only is needed here.

An exposure is made beneath a multi-colored diapositive or in a camera, as in taking ordinary exposures from the rear through the screen. The image is then developed in non-tanning developer and fixed. The silver deposit is bleached in one of the known bleaching agents which differentially tan the developed parts in accordance with the silver deposit, and is then fixed so as to remove the newly-formed bromide or chromate of silver. The gelatin which has remained soluble is now dissolved in a warm-water bath similarly as is done in the well-known "carbon" process. The remaining white pigment is thus distributed correspondingly to the distribution required in the color screen picture. On a red spot, for example, only the red parts of the screen are covered with pigment, the others lie free. At a black part the whole screen is free, while at the white parts all the screen is covered. The thickness of the pigment layer corresponds everywhere with the amount of light received by the sensitized film.

After this the pigment layer is pressed onto an alcohol-soaked colorless gelatin-layer. alcohol penetrates through the pigment and causes the colors of the screen to dissolve and penetrate into the white pigment. The colors not covered by pigment pass into and are wholly absorbed by the firmly-pressed-on gelatin layer. When the colors have been sufficiently absorbed by the pigment the two layers or films are separated from each other. For interrupting the coloring action the solvent in the pigment is made to quickly evaporate by means of a warm air current. The white pigment has now been changed to a colored picture with the correct scale of density according to the different thickness of the layer. By double transfer the withdrawal of the pigment from the screen and its application to a black paper backing are effected. method is equally suitable for copying, enlarging, and for directly taking photographic views.



REPLIES TO QUERIES



EDITOR, PHOTOGRAPHIC JOURNAL OF AMERICA: Is it possible to change the color of blue prints (such as those made upon ordinary blueprint paper) to any other color-such as black, sepia and a platinum effect; if so, how can it be accomplished?

G. SINBOURNE.

1. We know of no process whereby a blueprint may be changed to a jet black. It can, however, be converted to a violet-black by the

following means:

Immerse the prints in a solution of borax, $\frac{1}{4}$ of an ounce in 6 ounces of water; when bleached in this solution, wash well, then immerse in a solution composed of gallic acid, \(\frac{1}{4} \) ounce; water, 8 ounces. As soon as the color is obtained wash them well and dry.

2. Platinum effects may be produced by dipping the prints into the following: borax, 60 grains; strong water ammonia, 1 dram; water, 6 fluidounces. Bleach the prints in this; wash well; then immerse in a saturated solution of gallic acid. As soon as the platinum color is obtained, wash them well and dry.

3. Sepia colors may be produced by placing the prints in the following solution:

No. 1

Tannic						60 gr.
Hydroc	hlori	c a	cid			8 drops
Water						3 fl. oz
			N	0.	2	
Carbonate of potassium						$\frac{1}{2}$ oz.
Water		•				10 fl oz

Take 60 drops of No. 1 in 6 ounces of water; place the print in this solution for about two to five minutes (according to temperature), wash in clean water; then place in No. 2 until the desired color is obtained; then wash them well, mount or dry.

Photographic Materials and Processes

Moisture; Action of, on the sensitiveness of photographic plates. E. Cousin. Bull. Soc. Franc. Phot., 1918, 6, 27-28.

Experiments are described to demonstrate the reduction of sensitiveness of a photographic plate by moistening the film. For example, if a plate be placed in contact for some time with piece of damp paper, on which a design is printe; in greasy ink, impervious to moisture, a positive of the design is obtained on slightly exposing and

developing the plate. (Photographic) reducing bath of acid potassium E. Cousin. Bull. Soc. Franc. Phot., bichromate.

1918, 6, 26-27.

In consequence of the high price of potassium ferricyanide a reducing solution is recommended containing one part of potassium bichromate and 20 parts of sodium bisulphate per 1000 parts of water. If too low a proportion of bisulphate used an intensifying effect is produced by the formation of silver chromate.

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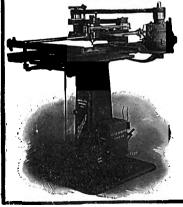


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PORTRAITS IN HOMES AND GARDENS

By CHARLES H. DAVIS

PART I

NEW vista is opening for the portrait photographer. New opportunities, new scenes and new conditions await every excursion into homes, offices or gardens for the purpose of making portraits. The vogue of likenesses made in other places than studios with skylights is a growing one and is already becoming a distinct departure or branch of the portraiturist's work. This is being demonstrated beyond question by the fact that some leading professionals are devoting their entire attention to this class of work and establishing successful and growing businesses in this line alone. This makes the consideration of the subject a very interesting one. It is a branch of work that requires special training, involves disappointments and heart-burnings, along with the many unique and beautiful results that may be produced. It is the part of wisdom to consider the difficulties carefully, as

well as to examine one's self rigorously for the qualities that make for its successful prosecution. It is unwise to imagine that the work is easy; for it is not. Compared with it, portraiture under a skylight is child's play. It used to be said that no operator (for lack of a better word) could go under a strange light and produce the best results; or in other words, he would have to become accustomed to the varying conditions there before he could find himself and make uniform lightings and correctly exposed negatives. If this be true, and it is largely so, how much more difficult it certainly must be to go constantly into strange places and do successful work. The factors, therefore, first of all,

The factors, therefore, first of all, must be knowledge—wedded to experience, with a large amount of discrimination and tact, resourcefulness, close observation, ingenuity, patience and common-sense. Given these qualities,

as well as a complete photographic education, politeness, suavity and poise, there is nothing to prevent success.

These qualifications seem exhaustive, but it will be found that the successful ones possess most of them. Without these qualities I should advise the recognition of one's limitations and continue to work in the studio, for a large measure of success will only come to those whose personal endowment and ability equip them to master the difficulties and disappointments with which the path is so plentifully beset. passing let us note that patience and a capacity for hard work are largely matters of self-control. These qualities are very necessary, and may be cultivated. I speak from experience and know. I have been lauded by clients for infinite patience, but I know in my own heart that I have little of this quality; but with determined self-control I have produced the impression of having it, and perhaps this amounts to the same thing.

Another qualification, which is very important, is the ability to pose the figure gracefully and give due attention to the arrangement of the hands. If the charm of home settings is to be preserved, the figure must be shown. The environment found in the home will make the picture interesting and valuable.

The phrase "home portraiture" should mean something more than merely a portrait made at the patron's home. It should mean something beyond the stereotyped head and bust representation which has become the major type of portrait produced by the rank and file of the photographic This style of portraiture profession. degenerated until it has now become a sort of map of the sitter's features, often freakishly and spottily lighted by electric additions to daylight, sometimes overobscured or befuddled by the misuse of soft focus lenses, and further distorted by curiously wrought backgrounds supposed to imitate the masterpieces of portrait painting, but really doing violence to their memories and traditions. Since this style took possession of some of our high-priced

specialists, a sort of picture has prevailed that may be made anywhereand is actually produced in any old place, and it is a sort of portraiture that does not reflect a large amount of credit upon the maker or lead to a higher plane of work. The writer hopes, through the growing vogue of "home portraiture," to see a return to sanity in picture making and more use of the figure, and once more behold a product that shall not only portray the subjects as they are, but shall, in addition, give them the individuality of their own surroundings. Thus Mr. A.'s portrait shall become quite different from that of his neighbor's, so that Mr. B.'s portrait, when perchance they exchange, will not be identical except for a difference in physiognomy. In short, let us make pictures of people at their homes that shall proclaim them to be at home and at ease among their own individual things.

With this desirable feature in view the folly of always putting the subject in a predetermined pose or fitting them into a certain style of lighting becomes quite apparent.

My outfit for outside work consists of an 8 x 10 standard make of camera, called "home portrait" by the manufacturer. It uses double holders for plates or films. It is very light, and all the movements, which comprise double swing back and rising and falling front, are quickly and conveniently made by thumb screws. There is also provision for adjusting the entire front sidewise on the base. The bellows is square and the front board is large. I use a Thornton and Pickard rolling blind shutter with positive cable release. This shutter can be set for time or instantaneous, and is absolutely reliable, and makes Mine is attached back of little noise. the lens outside of the camera and is removed and placed inside for carrying.

The whole packs closely and is carried in a case with three holders, and lens. For additional holders I have a separate case. The entire outfit, when closed for carrying is in three parts—camera, plate-holder case and tripod. The holder case is carried by a shoulder-strap, leaving the hands free for camera and tripod.

There are very convenient but expensive home portrait outfits on the market. The length of one's purse must regulate this outlay. It pays to own a convenient and well-made outfit, and the purchase of such is really an investment. Besides, your client is impressed by a good-look-

ing apparatus.

I use a standard center-leg tripod of wood that folds compactly. This style of tripod is rigid, can be raised and lowered, has a tilting top, is readily moved about and will stand anywhere securely. The character of the tripod is of the greatest importance. Much time and temper are lost with the ordinary folding type. It slips at the most inopportune moment; or when engrossed with the subject a chance movement may trip one leg, with disastrous results; not only to one's own feelings and temperament, but to those of the sitter. Then all has to be done over again. If the camera has not been smashed or other minor damage done, much damage has accrued to other things concerned. Not only has one's own equanimity been upset along with the camera, but the subject's already tense feelings tightened, and there is, to say the least, the devil to pay. Consequently a few dollars invested in the center pillar, spreading leg, adjustable tilting-top variety are well spent, for such a tripod will stay put and remain constant upon the smoothest wax-polished floor-where perhaps angels fear to tread. So much for tranquility and certitude. type is manufactured by at least two different concerns.

As to the lens, for all-around use, I have found a Cooke Series VI, 8 x 10, 13-inch focus, f/5.6., the most satisfactory for home portrait work. The focal length is not ideal—a longer focus would be an improvement in many ways, but as one has to consider limited working spaces or carry several lenses, the above seems to be the most desirable. It gives a minimum of distortion even on large heads, and it has brilliancy, ample speed, and, if wanted, critical definition. Not even the Hun makers. perfect as their products are, have anything on the English Cooke; in truth, I am confident that it is quite an unequalled product. Of course, a battery of convertible anastigmats would be the criterion of luxurious perfection. but this again involves an extra weight to carry, and I have been in few situations where I felt the need of anything beside my perfect Cooke, which gives me, in addition to its exquisite definition, a range of diffusion that enables one to verge on soft focus effects with every degree between that and positive sharpness. This lens is provided with attachments for cords, enabling one to regulate the diffusion while observing the ground glass; and this I find in practical use a very desirable feature. There are plenty of good lenses, however, and more depends on the user than is generally recognized by those of scant experience. The American-made Velostigmat, 8 x 10, f/4.5, is well spoken of and its 12-inch focus is satisfactory. I would not advise a shorter focus lens. An inch or two more will give far lovelier results, as the perspective is less violent.

I am usually provided with plates or films for eighteen exposures and, if necessary, an extra package of plates or films which can always be changed on the spot in any dark closet in the home. I do not find a safe light necessary for changing. In addition to the above, I always carry a twenty-five-foot length of strong cord, about a half-dozen spring clothes-pins, a few brads and small nails and a few sheets of white tissue paper. I always find a reflector in a sheet at the home, and unless I know beforehand that the walls of the home are impossible photographically I never carry any sort of a background. equipped I generally am able to secure satisfactory results. The reader can judge these results from the examples printed herewith.

While on the subject of equipment and materials I wish to record the fact that the new portrait films are ideal for home work. They possess qualities besides lightness and freedom from breakage. Halation is reduced to the minimum, and they seem to have both latitude and speed. They are coated with a very superior emulsion. It is to be hoped that the present high prices for them may be

somewhat reduced in the future.

is the principal objection to their more general use.

I do not carry or recommend the use of an electric light except in emergency cases. It savors too much of taking the studio to the home. An adequate equipment for artificial lighting would need a truck or at least an automobile. The use of meager electric lights is probably the reason for much of the hard and contrasty home work we see displayed. It is well to supplement daylight by artificial, but I do not find in practice that it is necessary to carry an electric equipment. The new flash lamps seem to be successful but cumbersome. A good open flash that spreads along a channel of metal and sets off by a trigger and cap is occasionally very useful. Employed with skill its results are good. I have often helped out with a small flash and no trace of its use can be found in the negative. Of course, it must always be fired so that no direct light from it can enter the lens. A lamp of this kind is very inexpensive and can be carried in the pocket.

The figure should be made to play a more important part in home portraits—giving them real value as human documents—and it should usually be possible with the sitter "at home" to include something of their surroundings, something suggesting the subject to their intimate friends, who are the ultimate recipients of personal photographs.

There can be no doubt regarding the tremendous advantage this growing opportunity presents to the photographer who is alive to its great possibilities and able to surmount the difficulties. ways confronted with new conditions, new surroundings and new light effects, he should give full play to his originality, and produce work of infinite variety and charm, reflecting the changed conditions rather than seeking to knock every portrait and condition down to the dead level of studio mediocrity and sameness. He is no longer bound and trammelled by a skylight and its few changes of lighting effects—by a few pieces of furniture and accessories that must be used again and again, day after day, until, dispose them as he may, they appear and reappear in his work ad nauseam. He has at hand a great variety of accessories and furniture all waiting to be fitted into his portraits, which, if employed judiciously and recorded with simple truth and beauty, will make his work instinct with life and character and give it those indefinable qualities which differentiate each person from every other, which may be summed up in the single expression of "personality."

I venture to advise that any disarrangement of furniture, curtains or pictures be religiously restored just as found. The housewife and her servants will appreciate your care and thoughtfulness.

In proceeding to make negatives, the first thing that should be guarded against is a violent or contrasty lighting. sitter should be placed at some distance from the window, certainly six or eight feet, sometimes more, depending on the area of the window. If the window receives the direct light of the sun it should be covered with white tissue paper. A few pieces of gummed paper should always be carried, as it is very useful to fasten the tissue together and suspend it in the window. A good trick is to pull down the window shade and attach the tissue to it. By the simple process of allowing the shade to go up to its full extent the tissue will be carried up smoothly and the window covered. If the light is very brilliant it is a wise plan to interpose an additional tissue paper screen between the window and This may be fastened to a the sitter. stick or a broom handle, and there is generally someone willing to hold it where wanted. A small clothes-horse from the kitchen will be found useful for this purpose. By this screen the light on the sitter can be toned, regulated and controlled. Letting a little light shoot in behind this screen will give a beautiful In case a Rembrandt or roundness. edge lighting is desired the screen may be increased in opacity by a newspaper so that the light can be manipulated perfectly and the screen will still pass enough light to avoid hard shadows. It will be found that the tissued window diffuses the light very greatly and becomes the source of light.

Use a reflector, but do not overdo it. A sheet held by a member of the family or supported on a cord fastened across the room is satisfactory. When no assistant is at hand, or no one can be impressed, I use a long cord (which I always carry), fastened to any convenient object at each end. The sheet may be suspended just where needed by the use of spring clothes-pins. reflector is a real necessity nearly always, though many spots may be found, such as a corner with windows on each side admitting light of different degrees of One window is sure to be strength. brighter than the other, and if this condition is taken advantage of the subject gets a round lighting with soft shadows without a reflector. enters the faculty of observation and of adapting one's self to conditions. portrait of "Mother and Baby" (Mrs. Proal) was made in just such a place as described above. The sun was shooting in the window to my left, but not falling on the babe, and the window to the right was fully lighted but without direct sun. The result shows plenty of soft shadows with full illumination.

In working in homes it is always best to select a room with light decorations, as the general illumination of the apartment is greatly enhanced by the reflections from light walls. It is frequently, possible under light decorative conditions to avoid the use of a reflector. Sometimes a pier mirror is available as a reflector, and as this gives greater brilliancy, one must be on his guard against unpleasant double lighting effects. A mirror reflects much more light than a white cloth, consequently it must be kept farther away from the sitter.

When a movable mirror is available many attractive variations on the simple portrait may be made by its use. Mirror pictures are justly popular with the ladies, and if the subject admits of a profile as well as a front or three-quarter-face pose, very picturesque and beautiful results may be produced. The mirror can be so placed that the reflected image is nearly in the same plane as the face proper, thus getting a sharp reflected image. Sometimes it is pleasing to let the reflection be only an accessory in the

picture, in which case it is admissible for it to be out of focus to a certain The head may be posed often without much regard to the reflection, producing an interesting and pleasing result. Often it may be necessary to reduce the lens aperture considerably in order to make both images reasonably sharp, and unless the light is abundant this involves a longer exposure with danger of movement. I advise experiment with a mirror to find just the right angle to bring both images into focus at full opening. Short exposures, or the shortest possible, are always advantageous in order to record good expressions.

Care must be taken to avoid the inclusion of unpleasant objects in the mirror. This can be overcome, however, by having a plain cloth of almost any color held where the mirror will reflect it with the sitter, but the tone of the background shown in the mirror should be a distinct contrast for the best effect. For mirrors on walls, oval shapes are the most desirable, because they are not noticeably altered in shape by the position of the camera. A very attractive effect may be produced by placing such a mirror about three feet from the window on the same wall. By manipulating a sheet diagonally in front of the window enough light is thrown upon the sitter to give a beautiful effect. example of this style of lighting appears herewith in the "Boudoir Mirror." In making this sort of a picture the other windows in the room can be used to give general illumination. The lens must be carefully screened to prevent any direct light reaching the plate and producing Always bear in mind that the lens is also a window, and that it is easy to get more light than picture on the

As an evidence of how readily studio results may be simulated in an ordinary room with the light of one tissued window, the reader is asked to consider the portrait of Mr. A., and the profile study of a young lady. These two are quite as attractively lighted as any portraits I ever made in my old Davis & Sanford studio on Fifth Avenue, where the skylight measured 18 x 28 feet and where I had every appliance and convenience

for studio portraiture. They are comparable with any studio work, but were made without much more effort than a careful placing of the subject in relation to the window light. The gentleman was eight feet from the window and the lady about ten. The window was 2 feet 6 inches x 6 feet, and was covered with tissue paper. I will refer briefly to the other illustrations.

The character portrait of Mr. Otis Skinner was made in his dressing-room in the Globe Theatre, New York, after he was "made up" for a matinee performance. No preparations were made except to clear the wall at one end of the room and adjust the window shades, which were hung at the bottom and pulled upward. No reflector was used. This is only one of fourteen negatives that were made in the same spot, and all were equally successful.

The laughing baby and mother, entitled "Happiness," was made by the light of one window with a cheese-cloth screen interposed to modulate the light. The lens used was a Helier at full opening f/4.5 and the exposure was very brief, probably not more than a tenth of a second. A Stanley plate was used.

"The Bride" illustrates the effect of soft diffused light. The sitter was about fifteen feet from the windows that furnished the maximum illumination, and even this light was tempered by holding up tissue paper. The windows that appears in the print furnished very little light for the subject. Exposure about three seconds on a Stanley plate, with Cooke long 15.6

with Cooke lens f/5.6. In the case of Miss Burr's portrait, there was such a wealth of beautiful detail, objects d'art, charming seats and corners in her home, that it would be almost impossible to point the camera in any direction and not get interesting accessories; but in this condition there is a danger-"too much of a good thing" as the old adage reads. So I selected the most individual of all the places in her wonderful drawing-room and seated her at her own desk without changing its position or moving any of its adornments. I made several negatives of her seated there. At the rear of the desk was a table with much bric-a-brac and a

large vase of flowers. This I banished by using an ordinary three-fold screen, an article which can be found in most houses. If it does not exist a clotheshorse with a piece of drapery, even a rug thrown over it answers the purpose. The result, as the reader may observe, is not only a charming portrait of the poet, but it is a portrait set among her most intimate treasures—a portrait of her father and many things that her friends recognize instantly-almost as quickly as they would the lady's face. me is the sine qua non of a home portrait, and I am quite positive that the lady was of the same mind, as she has certified to it by ordering four dozen to date. Suppose, for instance, that I had followed the formula of some workers who make good negatives and try to produce good results, and used a black cloth for a background and thus obliterated every single individual touch. The portrait in that case would have been a picture made at home, but it would lack the very quality that is so pleasing in this.

In conclusion, let me say that in the well-nigh universal gradgrind of our profession of photography there it too great a tendency to do things in the easiest way. It is, as before mentioned much simpler to avoid figure poses and to blot out (scrape out) undesirable backgrounds and put in others by the use of the ground-glass substitute and stump work, creating something that is false, inappropriate and absolutely inartistic, and the defence is that the customer likes it. It is infinitely better to find a suitable place for the portrait in the home and leave the natural result untouched, for by so doing not only is the portrait made appropriate, pleasing and artistic, but the result is achieved without additional labor and expense; surely a consummation devoutly to be But, and here comes the rub! This involves care, painstaking skill and resourcefulness on the part of the photographer. These desirable qualities should be more generally cultivated. I hope that this may be realized through the production of figure portraits in the home, for by just these virtues are better pictures to be made.

Furthermore, I believe in educating

the client as well as ourselves. Let us in our studios emulate the example of a famous printing house said to do the best catalogue printing in America. In the anteroom through which visitors and customers must pass are exhibited in show cases many examples of early masterpieces of printing. This exhibit, says Henry Lewis Bullen, a great printing expert and authority, creates an expectancy of quality and lends dignity to the printing house. If we photographers would collect and display masterpieces of drawing, painting and sculpture, done by photography and in plaster, of faultless and recognized merit, would not they have a similar effect on our customers and visitors? It would at least tend to show that we had ideals, and in educating the customer we would likewise educate ourselves, making easier of accomplishment many things we now pass over as quite too much trouble to be considered. It has been well said that if we are to do beautiful things we must live in an atmosphere of beauty and refinement so that our habit of thought tends that way. A beautiful environment has a potent influence on workers of every degree. The mind thus becomes educated and better work is the unconscious result. Let us have ideals and work toward them.

Home portraiture is an avenue of escape from the hundrum stereotypes of the studio. Let us therefore grasp these delightful opportunities and try

to accomplish more original and beautiful results. Every sitting in the home is an adventure, fraught with wonderful possibilities. The way is an untrammelled one. Keep your minds open for new effects. See with your minds more than with your eyes, and your results will often surprise yourselves. things are of vital interest to those among the profession who hope to see the photographic portrait business carried on prosperously and pleasurably by all who are engaged in honest endeavor. Whereever home portraiture fails to be honored and sought after and well paid for, the cause is to be found in the limitations of the photographers themselves. Home portraiture is an art that requires intelligence and ability above the average make it really successful. mechanics and processes of the art are very efficient and there is no secret as to methods; its failure is in those who use the machinery and methods. The route to eminence is through the study of inspiring works of art. There is no other way. Rudolf Eickemeyer achieved his great reputation and incidentally his great collection of medals and other honors by persistent application, study and hard work. Edison says that "genius is 10 per cent. inspiration and 90 per cent. perspiration"; in other words, the capacity for taking infinite pains.

[Next month Mr. Davis will write on "Outdoor and Garden Portraiture."— Ep.]

THE NEW PHOTOGRAPHY

THE world war has changed things for everybody. No profession expects to take things up where they were left off in 1914, when the Kaiser went on a rampage. Things are changed—materially changed—and it would be worse than futile to try to go back to the old ways.

And no profession has changed more than that of the photographer. Out of the land of the uncertain he has been practically hurled by the force of circumstances into one of the most important places in the new scheme of things.

He has become through his skill in manipulating the modern camera, an indispensable part of any program.

The war could not have been fought successfully without him. His place in history is secure. 'Twas aëro-photography that made possible some of the most brilliant victories of the war.

And now that the photographer has felt his power, could one imagine that



"THE BRIDE"
HOME PORTRAIT
BY CHARLES H. DAVIS
NEW YORK







"PROFILE STUDY"
HOME PORTRAIT
BY CHARLES H. DAVIS
NEW YORK



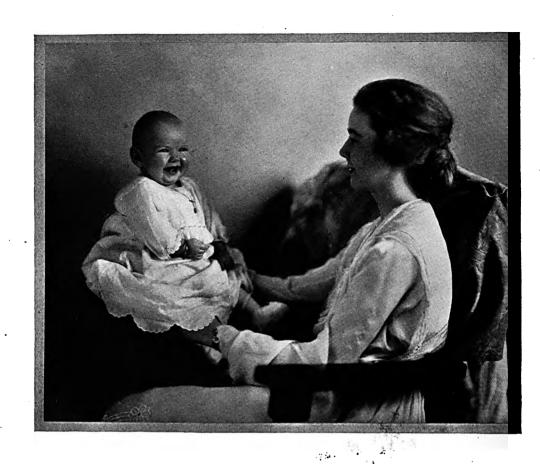




"THE BOUDOIR MIRROR'
HOME PORTRAIT
BY CHARLES H. DAVIS
NEW YORK







"HAPPINESS"
HOME PORTRAIT
BY CHARLES H. DAVIS
NEW YORK



he will go back to the old way of doing things.

Never.

He will demand more and more the right to his place. He is a business man now, with a business that is in demand. And he may be depended upon to play his part in the new world with a high order of efficiency.

The new day will demand skill, and the photographer who is not willing to pay the price of acquiring that skill may expect to be scuttled by the man who understands that the old order is passed away and that "all things are become

new"-even photography.

The new photographer will have only the very latest and most improved equipment; he will require competent assistants; he will use reliable materials, and he will turn out work that will reflect credit upon him. The public will, of course, have to pay for this, but then the public will always pay for what it wants.

We welcome the new day for photography. We believe it will put the profession where we have always wanted to see it—at the forefront of the professions of the country.

If you were one of the very fortunate photographers who had a part in the great world war-in the aëro or other division of the service, we wonder if you would not like to recite some of thrilling experiences to vour brothers of the profession who were less fortunate.

We would welcome the opportunity to publish some of the stories that you could tell, and we are wondering who will be the first to come across and give us a good live story "from the front."

Will you do it?-Photo Lore.

ORIGINALITY IN PORTRAITURE

By "PROFESSIONAL"

HAVE elsewhere in this series of papers rather discouraged too close attention to technic, as tending to divert attention from the artistic side of

photography.

I would also caution my readers against too close attention to the technic of art principles, if done to the sacrifice of the portrayal of the character of our patrons. Let us not forget that we are portraitists, and strive to progress toward success as such, bringing to our aid the application of whatever art principles we may from time to time acquire, in order to round out our results. Let us not be content with a well-arranged composition if it lacks the important essential of character. This indeed is the climax of our work, and upon it depends the lasting quality of the picture. There can be no successful portraiture without character, and this quality is first in the mind of the patron.

Our greatest and strongest men and most womenly women are often as weak as children under the light, as far as ability to be themselves is concerned: and, if the operator's mind is bent solely upon the arrangement of the sitter, lighting, etc., he may neglect proper attention to this vital part of his work.

A portrait should always reveal, as far as possible, the strength of character which makes the man what he is.

Art is beauty in some form or other, and to preserve harmony in your work the expression should be in keeping with There is no the facial characteristics. beauty in a shallow expression in the portrait of a man who has made a name for himself which has marked him among his fellows. Do not deceive yourself that such a man wants simply a pleasing expression, for he does not.

A refined woman should have proofs presented her that show refinement, and such a subject should never be posed to portray her otherwise. Women have very keen intuition and read the photographer quicker than a flash if their



portraits show them other than they are.

Beside portraying your conception of the sitter's personality, taking care that it be not a superficial one, pains should be taken that it be of a pleasing nature, as likely to be more satisfactory. A man may have had a successful life in any one of the many avenues through which success is attained, and not have led a particularly noble existence, nor, for that matter, an ignoble one either. may have an ugly physiognomy, or the strength of his face may be displeasing. Without resorting to retouching (often (barbarously done) as your sole aid to softening or making it less unpleasant, various methods of lighting the model, lens work, with tact in advising various forms of expression, or intersting him in some subject which will lend animation to the eyes, will be found most successful in results. At a future time we will, under the head of "Lighting." make mention of our own and the views of others of the part which lighting plays in this respect.

Originality, as treated above, relates entirely to the photographer and his manner of handling the subject. Originality in portraiture, as well as in "studies," may also mean conceptions out of the ordinary, those unique in arrangement, or in any other of the principles of composition. It may mean originality in the various other stages after the negative is made and before the picture is finished. It is on these lines that the young, as well as many older photographers, often err in their efforts toward obtaining something artistic. While we are all pleased to see something new and decidedly original if successful, yet too much reaching for such results, without a good idea, is fraught with great danger.

It is often the case that operators possessed with a vague idea of what is desired to produce work that will be original and artistic reach out after the outrageous, thinking if they can obtain corkscrew poses, bizarré effects of light and shade, and a mass of heterogeneous accessories in a picture, or by mounting the print in some peculiar way, that they have obtained what is necessary. Origin-

ality in these conceptions is successful only when a knowledge of what not to do tempers one's efforts in obtaining the unusual. Unless possessed of considerable experience in photographic technic, attended also with some degree of former success, it is well to be careful of attempting complicated experiments until your experience is such as to call to your aid the more important art principles, the absence of which would ruin a good conception.

Arrangement or Design

The next step in "creating the picture" is the arrangement or design. It is well to mention here that from now on every part of the work bears a connecting link with every other part, and that while you are performing one thing a step is being taken toward another, and perhaps equally as important, principle in art.

There are various forms of arrangement or design in composition, which embrace and are aided in their accomplishment, not only by all the parts of the figure itself, but also the judicious handling of the clothing and drapery of the model together with other and outside accessories which should only be brought into the picture for this purpose. Nothing should be included in the picture without a definite reason for being there, either to complete the design or add strength by its inclusion. If they do not answer these purposes, leave them out.

The background, the importance and character of which have always been misunderstood and underestimated; the foreground, the massing of light and dark, and a score of other things, all assist toward a definite form of composition to which the completed picture should conform.

Avoid, however, making the form of arrangement so apparent as to give thereby undue prominence to the fact that this or that design was your scheme. Let it be felt intuitively, and when looked for especially, if not slavishly carried out, it is all the better. As you compose, see which form conditions tend toward, and let your posing, etc., incline that way. Of the various forms of com-

position in protraiture, the circular, elliptical, various forms of the angular, S and Z lines, etc., the most commonly understood and practised by photographers are the circular and pyramidal as a whole, and the S form in posing women's figures.

Concentration of Interest

In arranging the composition, bear in mind that everything should serve to draw attention to the most important point in the picture, which, in a portrait, is the face.

To assist in this the principal lines should tend to this end, whereas others should be used, either as an aid to this object or as a balance to the composition. These lines may be there, whether we will or not, in which case, if objectionable, other lines are created by arrangement, either to nullify their importance or to give strength or balance as the case may be.

We take it for granted that all our readers know what is meant by illness in a picture sense. They may be briefly described as including all the lines, whether straight, curved, or angular, that emanate from the body itself or the drapery with which it is clothed, as well as from any other form or shape used in the picture, including the accessories, background or foreground.

Of course it is taken for granted, by the nature of location, that there are some lines that may be important, which are remote from the figure itself and which are not expected especially to serve as an aid to drawing attention to the face. These, however, should be relegated to their proper position or attractiveness, or they will become too prominent, detract from the concentration of interest to the face, and form a discordant note in the arrangement.

Contrasts are often used as an aid to the concentration of interest, to accentuate a light or dark by proximity, and when needed, the skill of the photographer can make this possible. This quality of contrast has great power in arrangement.

Subordination

The relegating of less important objects to a proportionally less conspicuous measure of attractiveness, or subordination, is one of the most important principles of composition. It plays an ever-present part in pictorial work. Lighting is the key to its use, and, as even fair composition is impossible without it, the importance of proper lighting is readily seen in connection with subordination, as our measure of success in making less attractive undesirable parts of the subject is on a par with our ability to control the lighting to render this result. Lack of proper subordination will throw the whole composition in every part out of order as easily as clumsy handling will render all of the notes of a piano discordant.

(To be continued.)

SURFACE JUDGMENTS

F course it is true that we cannot always find beauty in everything we see, but when we are tempted to turn away from that which is ugly in disgust with "I hate it" ready to burst from our lips, it may help us a wee bit to remember what the artist said to the man who watched him painting a tree trunk and who, after looking from the tree trunk to the painting and back

again, exclaimed in disgust: "What do you mean by putting all them there colors into your paintin' o' that tree? I don't see nothin' but a drab-colored bark."

"You don't?" asked the artist indifferently, going on with his work. "But don't you wish you could see the colors in it?"

There is much that is ugly, much



that is sordid, much that is cheap and lowering in the lives of many men and women and in the world in which they sweat in labor; but even in the grayest, most colorless, most squalid lives there is beauty which can be found for those whose eyes have been trained to see and whose hearts seek eagerly.

The finest beauty is not on the surface, as those who have mingled much with

men and women know. It is well to cultivate a penetrating eyesight, for beauty lurks far below the surface of many persons and things. The black-colored insulation hides within itself the bright wire which carries the current to light a thousand homes. Beauty exists everywhere for those who have eyes to see.—Thomas Dreier.

COMMERCIAL PHOTOGRAPHY

Panoramic Prints

THE making of big panoramic photographs is a very specialized part of commercial photography, and on a strictly business basis only justifies the outlay for the special apparatus if it can be seen that there is a reasonable demand for this class of work. And that leads me to say a word on the real business advantage, apart from the direct monetary gain, of having at command some special appliance with which you can tackle a job that would otherwise be impossible. For example, I was talking the other day to a colleague who showed me among his lenses a Goerz "Hypergon" of the extremely wide angle of 135 degrees—that is to say, the $3\frac{1}{2}$ -inch lens can cover a 12 x 10 plate. I suppose it is not once in a hundred, or perhaps five hundred times that this lens can be usefully employed, but my friend gave me an instance where his possession of it had meant the holding of the regular orders of a large customer simply because he had been able with it to make a photograph—it was a regular freak—which other photographers had declared to be impossible, but which the customer obstinately persisted in wanting. In commercial photography more than in any other branch of the photographic business, it pays one to be able to fall back on instruments which represent the most extreme limit to which photography can go, for the reason not that they are a direct source of profit,

but that they make for one's reputation as a man who can do anything which photographically can be done.

But to come back to the panoramic photographs. The special apparatus to which I refer is the "Cirkut" outfit of the Eastman Company. For outdoor use it replaces, or rather more than replaces, the wide-angle lens, since it is without the defects of drawing which are inseparable from the wide-angle lens, and at the same time makes it possible to take large direct negatives which could not be got so readily by any other means. In other words, it is an outfit with which the subject is photographed a little bit at a time on a large scale, and thus is specially fitted for groups running to hundreds of persons, for spaces such as railway yards, town sites, large private grounds, The negative (on film) may be 5 inches by 3 feet 6 inches, 10 inches by 12 feet, or 16 inches by 18 feet, according to which size of the camera is used. These are really film dimensions; the negatives may be of shorter length, as the subject may require. The principle of the camera is that the body rotates on the specially graduated turn-table head in conjunction with the movement of the film past a slot. On this system a view may be taken embracing the complete horizon of 360 degrees, and while the result does not correspond with any recognized system of perspective such as one obtains by photographing on flat plates, yet it yields prints which show the relative positions of

objects (as one would observe them in turn when twisting the body once completely round) in a way that no other single photograph can do. This is not to say that instances where it is necessary to cause the lens to make a complete revolution are common: usually an angle of view of little more than 90 degrees is necessary, but in comparison with the use of a wide-angle lens you then avoid the dwarfing of the more distant parts of the subject, while obtaining at the same time with a large aperture perfect covering power over all parts of the negative. A "Cirkut" outfit, on account of its cost, is a thing which is not bought without due deliberation. but it would probably surprise the reader to learn the number of these cameras for which photographers have judged it worth while to pay \$120 to \$500, according as choice is made among the three sizes already mentioned.

Although it is desirable, when dealing with very wide angles, to use a camera of the Cirkut or even of the Panoram Kodak type, fair results may be obtained by making a series of negatives. rotating the camera upon its tripod screw or turn-table through a sufficient angle between each exposure. A skilful printer will vignette such prints into one another so that no join is visible, or the prints may be cut and the edges butted together neatly when mounting. The objections to this method are that each section has a different vanishing-point, so that if a long, straight building is being represented, instead of the horizontal lines vanishing in a continuous curve, they go off in a series of straight lines, forming angles with each other at the joins. This is, of course, not evident when dealing with foliage foregrounds, mountains and similar subjects. Another defect is unevenness of illumination, the edges of each section being slightly darker than the center. This is hardly perceptible in a print from one negative, but when several are combined the presence of a series of light patches is very apparent. This may be minimized by using a small aperture in the lens and by including a much narrower angle

in each section than is generally done. In order to reduce the number of joins it is usual to use a wide-angle lens, getting about 60 degrees on each plate; if only half this angle be included the print will be more evenly lighted. Some photographers mount such panoramas under a cut-out mount, with a very narrow bar left at each section. This covers the join and also reduces the effect of unequal illumination.

Flash-light

In writing in an earlier paragraph of the photography of interiors I made only slight mention of flash-light, and I ought to say something further on this subject. since flash-light is one of the things which no commercial photographer can do without. A whole text-book might be devoted to flash-light work of various kinds, but I must confine myself here to some hints on points of chief importance in everyday work. The outfit need not be expensive in order to be efficient. The flash-lamp should be one burning flashpowder, and need only be a long narrow trough about 3 feet by 3 inches by 4 inches. All the better if it is of aluminium on account of the reduced weight. This trough is fixed on a strip of light board fitted on the under side with a bush, so that it can be raised on a rod carrying a screw at its end, and if necessary supported in this way, from a tripod, at a considerable height. Considering that a flash-lamp has to be used in all kinds of places, about the best means of igniting the powder is a bit of gun-cotton, which is in turn fired by a taper fixed to the end of a long rod.

Flash-light work does not call, as a rule, for a lens of extreme aperture; the subjects usually make it necessary to us a medium stop. Therefore, in the choice of a lens it is possible (and desirable) to avoid those of the air-space type, the tendency of which is toward flare. A lens hood is a fitment which should not be overlooked.

A great point in all flash-light work of extended subjects is to use the light at a good height, the higher the better, but never less than 8 or 9 feet, unless, of

course, the lowness of a room would then the ceiling. The powder should not be taken from its stoppered bottle until the subject has been arranged and focussed. Then it should be spread in a continuous train along the tray, the bit of gun-cotton laid midway and a little powder sprinkled over it. With this precaution the powder will ignite instantly, and will yield the maximum effect. Difficulty in lighting and complaints of a powder "going off" in quality can often be traced to leaving it about exposed to the air, and so absorbing moisture. Moreover, the perfectly dry powder will burn more quietly -in fact the whole business is under proper control—and the customer, who very often is an amateur photographer, and maybe has dabbled in flash-light work, immediately sees that one is master of one's job.

The quantity of powder to use is always a problem, but with an f/16 stop on a 12 by 10 plate, and when the subject is a fairly large building, a little under 1 ounce is not too much for full exposure on an extra rapid plate. Much depends, of course, on the character of the subject, whether light or dark, and experience can be the only sure guide, as it is in daylight exposures. In the case of quite near subjects, such as machines, work-people at a bench, and so on, the quantity of powder can be much reduced.

Flash-light interiors on a small scale call for much the same treatment as regards apparatus and focussing as that described. There are, however, certain precautions to be taken if a natural effect be desired, for a totally different appearance results from lighting of a room coming from an unusual quarter. Articles of furniture which are usually in shadow become obtrusive, and there is often the appearance as if the roof has been taken off, and the furniture photographed in sunlight. As a rule the light is placed too near the camera, and shadows are reduced to a minimum:

therefore, it behooves us to find out by means of a lamp, or even a couple of candles, from which point the light will cast sufficient shadow to give proper Although there is a natural relief. tendency to include the windows in a flash-light interior, it is not always wise to do so, as the blinds are apt to give unpleasing flat patches if pulled down, while if they are up there is serious danger of reflecting the flash into the Here again the lamp or candle comes in to test whether any reflections from windows, pictures, or mirrors are visible from the camera. While the operator watches the focussing screen an assistant should move the lamp about until a position is found which is quite satisfactory. A slight tilt of a picture or a mirror will often shift the reflection out of harm's way without showing any sign of disturbance in the photograph. In the case of a fixed mirror it is sometimes possible to fix a screen so as to prevent the light from striking the mirror; of course, such screen will be reflected, and, consequently, will appear in the picture, so that something inoffensive must be selected. Another danger is reflection from a mirror not included in the view, yet capable of reflecting light into the lens. Here a screen close to the camera will provide the necessary protection.

It is hardly necessary to say that equal care must be taken to secure perpendiculars with flash-light exposures as with daylight ones, but it may be useful to remember that in most rooms a larger aperture may be used if as high as possible a standpoint be taken and the camera pointed slightly downward; the necessary adjustment of the back then serves the double purpose of correcting the perpendiculars and bringing the foreground into focus. By using this device it is often possible to use an aperture one or even two degrees larger than would otherwise be necessary.

(To be concluded)

A TALK ON STUDIO LIGHTING

By FELIX RAYMER

THE old-time question of "what style light do you think best for making negatives" is still asked by many of our workmen, and some of them are of the best in the country. But take it as a whole this matter should not bother one that has given the question close study, and who has a fair amount of artistic ability. If he wishes a certain effect in lighting it will be secured by him, it matters not from what source the light may come. On all sides we hear the questions what should the angle of a skylight be, what size, and of what kind of glass we should make it, and so on through the whole list. If there was any certain style light of a given size that was absolutely necessary to the making of good work, it would be pitiful to note the few in the country who could produce it, for there are not a half dozen lights in the whole of the United States, so far as I know, that are of the same style, size, and of the same glass.

It has been my experience that the operator who has a good understanding of lightning, and knows what he wants when he goes in under the light, will succeed in getting that which he is after. To sum up in a nutshell the whole matter of different style lights, I will say that there are what we know as the double slant, single slant, and the perpendicular, or a large window. It has been my privilege to have worked under all these styles, and there are, of course, other styles that I have not seen; but, speaking from my experience with those that I have tried, I feel confident that all of the other styles may be as easily con-

trolled as those mentioned.

As to the style of light, it will make no difference in the effect of the lighting whether it be a single slant, double slant, or the window, so long as the one great principle of direction is carried out in the work. It is not the skylight that we are to consider, but the lighting, as it is to be made on the face. The lighting will never change. The same lighting can be made on all faces. The same effect can be secured any number of times, for it is made up of light and shade through which run the half tones connecting the two, and this combination of light and shade will be the same at all times and on all faces, if it is made the same by the operator, the skylight having nothing to do with it except as a means to an end. A few suggestions as to the manner in which each of the lights should be worked will perhaps make this statement clear. A single slant light measuring say twelve feet wide and eighteen feet high, starting about three feet from the floor, may be taken as an average of skylight construction. This style light usually drops into the room about four and a half feet from the top. To begin with, the light below the subject's head when a full length sitting is being made, is absolutely useless, and not only that, but a hinderance to good work. I mean, the light is too low, and if I had such a light, the first thing I would do would be to cut off all of the lower part up to a foot or two above the subject's head when standing. This will make the light start about seven or eight feet from the floor. The reason for this is that in portrait work there is never a time when we want the light to fall on the subject from beneath. If it does it will reverse all our ideas of The light should come from a point above the subject, and from only one source. Now it may be said in cutting off so much of the light the exposure will be increased. This may be true but what if it is, provided we make our work better. There can be no work of a satisfactory nature where the light strikes up under the face illuminating the lower part of it more strongly than the upper portion.

The closing off of this lower portion of the light may be done with opaque curtains. After closing it off we will have a light measuring about twelve feet by twelve feet. If it is desired such a light may be worked without other curtains, the only thing necessary being to place the subject at the right point or place in

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the room to get the light falling from the

proper direction.

The light being twelve feet wide, I would suggest that the subject be placed twelve feet from the light, out in the room, and at a point directly even with one end of it. This will allow all of the light to fall on the subject from the front. That is, all of the skylight will be in the front of the subject. Now, if the subject is turned slowly away from the light until all of the light leaves the shadow ear the lighting will be correct from any position the camera may occupy in the room. The reason for this is that you will be working the light on the square, so to speak. If it is twelve feet high and twelve feet wide and you have the subject posed twelve feet from it, the subject will occupy one corner of the square as it were, and the light falling toward the subject will divide the square in halves. This will give a fall of fortyfive degrees. In other words, and to make it plainer: If the light fell in a line from above straight down on the subject, it would be an angle of ninety degrees, and that line would represent one line of the square (the perpendicular line). But if the light fell from the side straight toward the subject that would be the right angle of ninety, and the line thus formed would be the horizontal line. Now, if this square is divided the light will fall from a half-way point, which will give the angle of forty-five degrees. As this square is reduced in size, the concentration of light and the accentuation of features will increase. But when it is reduced the subject must at the same time be moved nearer the light so as to hold him in the lower corner of the square. For example: If the subject is placed within five feet of the light, the opening of light in front of him should measure five feet wide by five feet high. If the subject is ten feet from the light the opening should be ten feet square, and so on. If stronger contrast is desired, the subject must be posed nearer the light, and the opening made smaller. In this way the light is concentrated on the parts that are desired to be emphasized. If softness is desired the full square opening of the light should be used. Now why the

square, it will be asked by some. For the reason that it can be most easily managed. The wider the light, the softer the results, and to make them stronger the light will have to be curtained off anyhow, to get them, so why not work with that idea in view all the time.

Now, for the double slant. If it is worked in the same way, the effect of the light on the face of the subject will be identically the same. If your light measures twelve feet wide, pose the subject twelve feet from it, under one edge, so that all of the light falls from the front. Close off all light from the subject's head, and curtain the light so that it will be the same height as width, and the subject will be in the lower corner of the square fartherest from the light, as in the single slant, and the effect will be the same.

If more contrast is desired, make the square smaller, but don't fail to move the subject nearer the light so as to hold him in that lower corner of the square, bearing in mind that the smaller the square and the nearer the light the more concen-

trated the effect.

If the light is an ordinary window, work it in the same way. If it is four feet wide, pose the subject four feet from it and at one edge so that all the light is in front of the subject, and then make the opening measure four feet above the subject's head, closing off all light from below the top of the head. This will again place the subject in the corner of the square, and the result will be the same as in the other examples, except that they will be more concentrated and the features more accentuated, for the reason that the opening in the light was smaller.

So we arrive at the conclusion that it matters not what the size of the light. If worked in squares, one light will be as good as any other. If it is but eight feet wide, pose eight feet from it. If twenty feet wide, and it is desired to work it at its full square opening, the operating-room should be wide enought to pose twenty feet from it. It has been the accepted opinion for many years past that the light should measure a greater number of feet in height than in width, but personally I prefer a square, and should curtain it so that it would be

square when lighting the subject whatever its original shape. Nor do I believe in putting in a light so that it is lower than the height of a subject posed standing, for it has not been my experience that this lower light is ever used. I have never found a fine workman who wanted the light to fall from any other direction than that mentioned above.

As to the glass used in the construction of a light, it is merely a matter of personal preference. One operator will like strong, crisp, high-lights, and will find clear glass best for his purpose. Another will like soft delicate results, and will find ground or hammered glass more suitable. There is the whole matter in a nutshell. The crispness or softness of effect is not a principle of lighting. The operator may use his pleasure in making it, bearing in mind, however, that there should never be a time when his highlights are so high as to fail in showing flesh tints, nor the shadows so deep that they fail to show the detail. There is no place in portraiture for absolute white or absolute black. Let there be detail in both.

BLISTERING OF PRINTS UPON DEVELOPING PAPERS

By ALFRED J. JARMAN

THE blistering of the emulsion upon the surface of developed prints oftentimes proves to be a serious loss to the photographer, to say nothing about the annoyance caused thereby.

The true cause of blistering is not easily traced, because it arises from different causes. At times it is brought about through the gelatin employed in making the emulsion being of a soft variety. In some instances it is due to the emulsion not having a firm hold upon the paper, an excess of hardening material contained in the emulsion, such as alum, is likely to cause this; while at other times the cause may be due to the structural surface of the paper. In any case, whatever the cause may be, it is very desirable to know of a means that will prevent this evil. One case of this kind may be mentioned that came within the writer's experience last winter, where prints upon glossy white paper, size 8 x 10, upon sheets of paper 20 inches x 24 inches. Blisters formed upon many of these sheets, many of them the size of the hand; prints by the dozen were completely ruined and made use-It may be stated here that these sheets of prints were developed 12 to 20 sheets at a time, there being as many as

1000 sheets a day developed. All the work was of a rushing character, the temperature of the developer being increased slightly to hasten the work. The tray contained six gallons of developer and the prints had to be handled with considerable dexterity by the man who handled them, while another person removed the prints, after a momentary rinse in the acetic acid bath, and placed then quickly into the hypo fixing bath. No less than three fixing baths or tanks were employed. During this rapid working there suddenly appeared an unusual crop of blistered prints, blisters in all sizes, which first made their appearance when placed into the first fixing bath. Various remedies were tried, including the introduction of formaldehyde in the first fixing bath, as well as the second fix-This addition partly remeing bath. died the trouble, but it brought about another difficulty, double tones in the prints were caused by the liberation of sulphur from the hypo by the introduction of the formaldehyde. So bad were these prints caused by the half-and-half colors that they were converted into light sepias to save a total loss. The hypo fixing solutions all contained a hardener

in addition to the formaldehyde, but this did not remedy the trouble. The acid bath employed to wash off the developer was made more acid. Still the defect continued in a more or less degree. Something had to be done, because the loss was becoming a very serious matter. At the writer's suggestion the temperature of the developing solution was lowered, and in place of using a plain acid bath in which the prints were placed directly from the developer, as is usual in making developed prints, a large proportion of hardener was employed in place of the acetic acid, made to the formula herewith published and is used by the writer today with perfect results as a cure for blistering—the use of formaldehyde having been dispensed with entirly.

Formula for the hardening solution:

Water (tepid)		40 fl. oz.
Sulphite of soda (dry)		6 oz. av.
Powdered potash alum		14 oz. av.
Acetic acid (No. 8).		40 oz. (fl.)

The water should be slightly warm, about 100° F., because the sodium sulphite and the alum dissolve more freely than in cold water. This mixture must be well shaken until the salts are nearly all dissolved, which will create a slightly turbid liquid. By the addition of the acetic acid the solution will clear up immediately. This preparation must be well shaken, which will cause it to become quite clear. When making the dipping solution that is used for placing the prints in direct from the developer instead of using the acetic acid and water-bath, employ the following:

Water 1 gallon Hardener (as above described) 1 pint

The effect upon the gelatin of the emulsion is magical, all tendency to blistering is stopped or prevented from commencing. Then when placed into the hypo fixing bath, which should also contain some of the same hardener in the proportion herewith given, the prints will pass through the various

stages of washing perfectly and without any deterioration of color.

The plain acetic acid bath generally used to arrest development, as soon as the print has been placed therein from the developer, arrests development by the acetic acid combining with the sodium carbonate of the developer and forming sodium acetate. At the same time it has a tendency to soften the gelatin of the emulsion, while the use of the hardener in lieu of the plain acetic acid with water only, not only arrests the development but sets up a hardening of the gelatin at the same time. The proportions for the fixing bath are as follows:

Fixing Bath

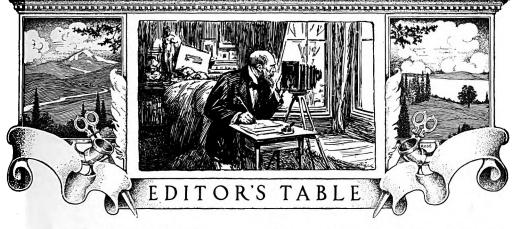
Hyposulphite of soda (tested to 70 by the argentometer) 10 pints Hardener 1 pint

The temperature of all the solutions must be kept as uniform as possible under working conditions. The use of a warm developer should be avoided because from this source the principal cause of blistering has been traced.

When dissolving the hyposulphite of soda for making up the fixing bath, warm water should be used, owing to the lowering of the temperature of the solution which always impairs the fixing

property.

The writer has known fixing solutions to be made in bulk in winter time with cold water and has seen in a few minutes small flakes of ice floating in the liquid, complaints being then made because of the imperfect fixing of the prints. In this case ninety pounds of hypo was used to make the solution. At all times the best way to dissolve hypo is to place it in a muslin bag (resembling a pillow-case), then tie the open end and suspend the bag by means of a strip of wood across the top of a vessel filled with water so as to cover the bag. The hypo quickly dissolves, the bag retains any dirt or chips of wood, when the clean solution is quickly ready for use.



HOME PHOTOGRAPHY

I has been the custom from time immemorial to point a moral by the use of a fable, or to emphasize a prediction or a statement by an illustration that bears clearly and logically

upon the subject.

The fable, when well chosen, is effective, but the fact when it can be used to connect that which has actually occurred and that predicted is far better. Therefore it is that everything in the nature of facts that go to show a widening field of profitable business for the professional photographer should be welcomed and recorded for the benefit and encouragement of the craft. It may further be said that fact is, in this case, synonymous with truth in its fullest interpretation, and is therefore to be sought and accepted wherever found and from whatever source obtained; in other words, a fact is none the less a fact, whether based upon our own pet theories or upon those of an opposing cult.

With this general introduction, let us get down to the recital, not of a fable, but of a fact, and one in which we believe much of interest and encouragement to the professional may be found. In it is contained unmistakable evidence that there exists in the community at large an active buying interest in the product of the studio, and that that interest hesitates not at the cost involved.

The fact referred to is that a certain photographer, working along lines some-

what apart from those followed by the regular professional today, but recognized abroad and by many of the more progressive workers in this country as ranking very high in the field of pictorial work, has lately received an order for a dozen prints on paper not exceeding 8 x 10, which order is accompanied by a check for \$300 in advance, or \$25 for each individual print. The subject of the portrait is a famous English novelist and the order comes to the American photographer direct from one of his nearest of kin. The portraits in question are from two negatives, prints from which have captivated the family of the novelist to the extent of bringing forth the order and the check above named.

In addition to this definite business proposition, the photographer has been introduced into the homes of one or more of New York's influential society people, where he has practically a free hand to produce photographic records of the

home and of the family.

If this means anything, it means that there is yet a large and undeveloped field outside the photographic studio, much more profitable and fraught with more artistic possibilities than ever has been dreamed of within its walls. It means that the progressive man who knows how to handle the implements of his craft may develop for himself a line of work from which a rich reward in money and reputation should result. Why do not more photographers within the fold expand their field of usefulness and

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develop more of this special work than is at present in evidence? It is the specialist, only, in every profession, who rises above the grade of the ordinary. This statement should hold true in photography as in every other line of work. There is no question but that the professional has, during the past twenty-five years, learned much from the intelligent and progressive amateur. If, in addition to what he has already acquired in this direction, he adopts to a still greater degree such methods as he may rightly apply to his own work, he will doubtless profit in the end. It is not to be supposed that an ordinary portrait made at the home will result in orders at \$300 per dozen in the beginning, but there is a possibility which we believe should be made a probability, and later an established fact, that the professional photographer, with his training along technical and artistic lines, should be able to accomplish all that his brother photographer without this special training is accomplishing all about him.

The citation of this fact is prompted by the deep interest which we take in all that stands for the advancement of photography, and that it may prove an object lesson to all who become cognizant

of it.

A BUSINESS BOOSTER

THERE is need just now, in a hundred studios, of a reliable little booklet or leaflet giving hints for the guidance of sitters. In the big towns this is not so very necessary perhaps nor in the very "way-back" districts, but in many a small city such a means of instruction would not only prove an advertisement for the studio, but would be appreciated by prospective customers.

A leaflet of this kind is a thing likely to be read—and discussed. It must not emphasize too many don'ts. Some booklets and newspaper articles which we have seen make a specialty of this department. "Don't interfere with the artist. Don't if you are fleshy, come in a tight-sleeved dress. Don't overdress." As if any overdressed woman was ever

aware of the fact. No! instead of issuing cautions and don'ts, point the right direction. Suggest the do's; those steps which will help the picture. Instead of cautioning people that they must come to the studio when calm and selfpossessed, infuse such a restful feeling into the place itself that entering it makes a person feel rested and at home. A booklet conceived in this spirit would do more good than a book crammed with rules for observance. Every photographer knows the importance of hair in a feminine photograph; but to advise on the matter! "If you have a plump round face dress your hair high; if you have a long, thin face, dress your hair long and broad." So go the instructions, but the ladies do not want lessons from us either in the arranging of their hair or the choosing of their dresses. advice should be, "Come as you are," and when they come their reception should convince them that they have done right.

There is one branch of portraiture, however, which is an exception—the portraiture of children. Children are not free agents in the matter of sittings; they attend at the wills of their elders. And while it is best to let the "grownups" come to the studio with minds unfettered with cautions, it may be necessary to give a few words of advice or caution regarding the preparation of the children. But even here it should merely be a caution that the child's head be not too much filled with anticipations—especially with slightly doubtful ones; and that morning is the best time, just because you want his or her highness to be feeling at the best—for a tired, afternoon feeling surely reflects

itself in the work.

Get rid, quietly, of one or two of the old ideas which lurk in the minds of so

many people. What time of day is the best? Now there are people alive—thousands of them—who have not been photographed for years, and the last time they faced the camera they had a head-rest behind them, and they gazed into the lens for twenty long, unwinking, non-breathing seconds. In reality, it was not a terrible ordeal; but to them, primed with warnings before ever they

reached the studio, it seemed so, and so it has seemed ever since. So tell people that bright sunlight is no longer an essential, but that they will be equally welcome in cloudy or in hazy weather. And let them know that there is no longer a long exposure, but that the portrait may be taken in a second or less. If you can, let them think that there is no "function" at all about it. Do not tell them to come preferably in grays, or to leave their red waists at home. Rather mention that they may wear any colors which seem best, and that correct representation may be assured. Do not go into learned disquisitions about new processes or panchromatic plates, but have the plates ready to hand when they are wanted.

Just as we have been told that the best posing is got by not posing at all, so the best appearance before the camera is usually got by refraining from cautions before the event. Make the people think that the whole process is simplicity, and that success is a matter of course, and half the victory is won.

How should a booklet be made? Talk it over with the printer; he will

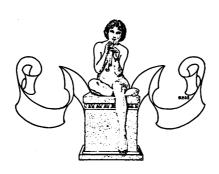
know how to advise.

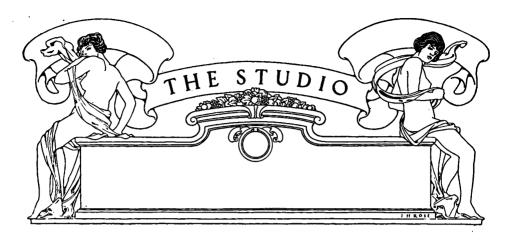
A column or half-column article. dealing chattily with photography, and by a local man, is often acceptable to the editor of a Sunday or a weekly edition. If your local paper is a job-press office (it's sure to be) ask the editor or manager about printing a column and then reprinting it in booklet form.

The very cheapest kind can be got by using the same types and setting, simply dividing the galley into three or four, and printing it as a four-page folder. Such an effort hits twice; first, in the paper, where it will be read by many who are not your customers, and again

when the booklets are sent out.

The photographer should during this month (if he has not already seen to it) get out such a booklet for the attraction of summer visitors in his locality, or for the stay-at-homes. It is a well-known fact that our women and children appear to the best advantage during the summer months, the open-air exercises and summer toilettes contributing to their attractiveness. The point should not be overlooked. For those who do not feel able to prepare the booklet for themselves, we would suggest the services of an expert in such matters.





PRACTICAL PAPERS ON STUDIO WORK AND METHODS

Portable Studios

THE term "portable" has a wide range of meaning when applied to a photographic studio. It may mean a caravan on wheels, a wooden building which can easily be taken to pieces and erected elsewhere, a specially designed tent, or even a temporary shelter for the sitter and background, the camera and operator being in the

open.

Studios in the first category—that is to say, of the caravan type—are now not so common as they used to be in the early collodion days, when many villages, and even small towns, had no photographer domiciled in them. There are, I believe, some which travel along with roundabouts, wild beasts, and fat ladies from fair to fair throughout the country, but I have not seen one for a good many years. Some of them were quite elaborate affairs, fitted up not only for glass positive and ferrotype work, but for printing on albumenized paper, the work often comparing favorably with that issued by many fixed studios. It may puzzle those who have never seen one to imagine how sufficient space was obtained, but this was easily done by adopting a telescopic form of construction, an inner body sliding out and being supported upon trestles.

sliding out and being supported upon trestles.

The form which will probably be of most interest to the majority of my readers is not a studio that is here today and gone tomorrow, but one which is intended to remain in one place for months, if not for years, but which can, if needed, be removed and re-erected at small cost, and by unskilled labor. Such studios are usually made entirely of wood and glass, and their portability is due to the fact that there is no general framework, but that the whole is built up in panels, which are fastened together with ordinary iron bolts and nuts. I will endeavor to give some idea of their construction, which is quite simple and well within the powers of the village carpenter, or even of an amateur who has some idea of wood-working. The first thing to be decided upon is the size, and, this being done, a drawing should be made and the size of the panels settled.

It is necessary to be very careful in constructing these that they should be exactly the size that they are supposed to be, or there will be a lot of unnecessary work when it comes to fitting together. The design is usually the ridge-roof one, somewhat after the pattern of Noah's ark without the barge. For a studio 20 x 12 by 8 ft. (to the eaves) and 11 ft. to the ridge the following divisions will be convenient: Each end is in two sections 6 ft. wide, one side being 8 ft. long and the other 11 ft. long. The two pairs of panels are exactly alike, except that one will probably have the door frame fitted into it. It must not be forgotten to keep the frames on the proper sides when nailing on the boarding, or they will have to be remade. I mention this because I have known three right-hand sections and one left-hand made, instead of two of each. The sides are made in four sections, each 5 ft. wide and 8 ft. high. Six of these are entirely covered with wood, and two have a cross-bar, say, 4 ft. up. Below this, wood is nailed on; above are sashbars for the side-light. The roof calls also for six wooden panels and two which are frames only, fitted with sash-bars for the top light. These are all 5 ft. wide and about 7 ft. long, so as to give a slight overhang at the eaves. The edges which meet at the ridge should be bevelled so as to give a good bearing. For a studio of this size the frames of the panels should be made of 4 x 3 deal, and the boarding should be good yellow $\frac{7}{8}$ matching. The frames may be mortised if the extra labor is not objected to, but "halved" joints answer quite well, as the boarding has to do its part in keeping the panels square; good cut nails should be used for fastening. The side and end panels should each have a crossbar halfway up, as not only does this stiffen the construction, but it keeps the boarding from warping In all the panels the framing comes inside the studio, and the panels are fastened together by drilling holes in which the bolts fit well, and without shake in the frames, so that, when laid side by side, they are drawn closely together. In the end sections the bolts run through the boarding as well as the frame, and are tightened up in

the same way as the side joints. It is perhaps hardly necessary to say that the woodwork should all be erected before the glass is put in the sashes, and that, in case of removal, the glass should be taken out before anything else is done.

Having made all our panels, we can assemble them. First the two ends are put together, and then the sides joined up to their full length. The back should next be joined to the ends, then the front fixed in, and finally the roof sections put up in pairs and screwed through on to the tops of the frames. Although not always done, it is a good plan to put one or more iron tie rods across at the level of the eaves to prevent any outward thrust. These should be \frac{3}{2} in. to 1 in. in diameter threaded at the ends with a good large nut put on both sides of the top of the side frames through which the rod goes.

The flooring is made in panels the width of the studio, and drops upon the lower part of the frame. There should be some arrangement of joists or brick piers to prevent vibration and

sagging.

The roof will require a waterproof covering. This may be corrugated iron or the asphalt roofing material known as Ruberoid, or, if obtainable, Uralite, which is fireproof, may be used. This is a sort of asbestos and plaster composition, and would keep the studio cooler than iron. It has the merits of not rusting and requiring no paint.

A building erected in the above way will not keep in condition long if placed directly upon the ground; therefore, some foundation which will keep the lower part dry must be provided. For a reason to be presently given this should be of a temporary character, and one which we found very successful was a row of loose bricks all round, the exact size of the studio, with two rows at equal distances running from end to end inside. Upon these bricks rested four long deals 20 ft. long and 3 x 9 section; the sides of the studio stood upon this, and there was sufficient space between the bricks for air to circulate freely below. A studio so erected was taken down after nine years, and was found to be quite sound, as were also the long timbers.

If one is building upon another person's land it is necessary to be very careful to do nothing that will give the landlord a claim to the building. If a studio or greenhouse is erected upon a brick foundation which forms an integral part of it, the whole at once comes under the control of the landlord, and the tenant cannot legally remove it. It has been held in the case of a lean-to greenhouse that the driving of iron holdfasts into the wall of a dwelling-house to secure part of the framework removed the structure from the category of "tenant's fixtures," and made it a

part of the freehold.

The foregoing description is necessarily of a

sketchy nature.

Tent studios are not much in favor in this country, as there is no possibility of using glass as part of the covering, and there is no water-proof material which will retain its whiteness for any appreciable period. Celluloid is, of course, out of the question, on account of its cost and inflammability. The most elaborate tent studio I have seen was one sold by the Stereoscopic

Company a quarter of a century ago.1 It consisted of a wooden skeleton of the ordinary ridgeroof form. The parts usually solid in a permanent studio were covered with tightly stretched sail canvas; the top and side-lights were without any permanent covering, and were fitted with dark and light roller blinds of the usual type. This was necessarily a rather costly affair, and a much simpler arrangement could be constructed with an ordinary small marquee as a basis. an opening were cut in a suitable position and a light wooden frame, or frames, fitted with wires and festoon blinds put in, quite a useful studio could be made. Some years ago a woven wire roofing, the meshes being filled with a transparent varnish, was placed upon the market; it was tried for studio lighting, but, being rather yellow, caused the exposures to be too long. Now that plates are three times as fast it might be worth trying it again, if it is still made. I have often thought that a serviceable studio might be made upon what is known as the tunnel principle—that is to say, a comparatively short square compartment for the sitter and background and a small tunnel or passage without light for the camera and operator. This idea light for the camera and operator. could be worked out in the form of a tent, and would have the great advantage of being economical of material and presenting the minimum area to wind pressure. It would not be difficult to arrange such a studio so that an ordinary shower need not interrupt work.

So-called "lawn" studios are merely devices

So-called lawn studios are interly devices for holding a background and curtains for cutting off the worst of the top and side-light. It is very easy to improvise something of the sort with four tent-poles and cords, a background, and some lengths of light and dark materials for curtains. All that has to be done is to fix the four poles at the corners of an 8 ft., or smaller, square, to run a cord round the tops, steady the whole with the ordinary ropes and pegs, and hang the background on whichever side suits the light. The lengths of material are hung over the top cord to serve as studio curtains. One friend of mine had four clothes post sockets fixed in his garden at the proper distances for a studio of this sort, and could drop the posts in, rig up the curtains, and get to work in less than ten minutes.—

B I

Dull Days

We have had a plenty of them, and as a result we have become quite proficient in the use of artificial light. But a demonstrator dropped in the other day and reminded us of the fact that there was a great deal more daylight outside the studio than there was inside and that we might use more of it and cut down our light bills.

It sounded reasonable, for we remembered the time when we had used daylight exclusively. But it is so easy to turn a switch and have light that we had almost forgotten how to use daylight.

This demonstrator insisted on making his point, however, and we are glad he did, for it is good to have the studio look bright and cheerful

¹ Wilson's Cyclopedic Photography.



and you can't keep the place lighted up like a theater all the time. In our location we get a lot of coal smoke and it makes everything look dingy, including the skylight. He drew back the blinds and there was no question about the skylight being dirty. We thought the rain and snow should be enough to keep it clean but it had not done it. He asked for some Bon Ami and a little kerosene and a rag and then gave us a practical demonstration from the fire escape landing, alongside our skylight.

When he had finished there was one pane of glass in that light that looked as though it wasn't there at all. He wouldn't take the job of doing the rest of it and we couldn't leave it as it was, for some sensitive customer would surely think it was a hole and immediately proceed to catch cold, so we decided to have a window

cleaner finish the job.

But this particular demonstrator wasn't satisfied with the prospect of a clean skylight. He suggested a much thinner set of curtains for screening the weak winter light, and when I mentioned some work we intend having done he suggested a light gray cold water paint for the walls, which were quite dark.

walls, which were quite dark.

And then what do you suppose he had the nerve to tell us? That our lenses were dirty and our camera was dusty. And the worst of it was that he went right ahead and proved it! You simply can't reason with one of these fellows who

proves everything as he goes along.

He carefully cleaned half the surface of the lens that is in the camera the most of the time, and when he had proved his point he was good

enough to clean the rest of it.

Then came the most startling demonstration of the day. He turned the camera toward a dark corner and placed one of our 1000-watt lamps and reflectors in position so that all the light would be projected through the camera and out of the opening where the lens had been. He then stepped in front of the camera and pushed the front back quickly, forcing the air that was in the bellows out of the lens board opening. To look at the dust in that bright light you would almost think there had been a charge of gunpowder set off in the camera.

Then he explained how the moisture from the air formed a film on the lens, and moving the bellows back and forth in focussing stirred up the dust inside the camera and some of it had to settle on the inner lens surface. Incidentally we discovered several pin holes in the bellows by stopping the front opening and throwing a focussing cloth over the back of the camera.

We stopped these up with tire tape.

Of course I knew all the time that this man was going to demonstrate the advantages of film to us the next day, and he had been talking speed, but he was quite right in arguing that it was to our advantage to get the full efficiency of our lens and our light as well as to use film or a fast plate.

We had the skylight cleaned and the demonstration followed, and I must say that this demonstrator not only convinced me that film was the proper material to use, but he also taught me several things, not new exactly, but things that make a difference in the quality of the negative.

There are a lot of these little things that we all know but we are old at the business and became

The demonstrator, on the other hand, may be old at the business but he must make it his business to remember the things that we forget—the things that make the little differences in

results.

I learned several things from this man that I needed to get me out of my ruts. First of all I had been underexposing everything. And to make it worse I had been going to the other extreme and was forcing development and using my developer entirely too warm. Can you imagine my results?

I thought they were pretty poor negatives,

I thought they were pretty poor negatives, but I wasn't looking for the loss of quality in the right place. I was developing for detail that wasn't there to develop, and was plastering up my high-lights and sooting my shadows, all of

which increased contrast.

I had not discovered my mistakes, because I had drifted into them and I got just the lift I needed to get me out. I don't know whether any of the readers of this magazine have had similar experiences or not. And if they have maybe they woundn't want to admit it. But I want to say right here, and now, that the demonstrators on this territory will find a cordial reception from now on. My work shows just about 50 per cent. improvement since that demonstrator pried his way into my good graces, but he won't have to use a "jimmy" to get in next time. And, incidently, I have been convinced and am using film.—Photo Digest.

Seasonable Window Dressing

PHOTOGRAPHERS as a body have accepted the fact that to be financially successful they must regard themselves as tradesmen, and not as members of an exclusive and dignified profession. A few favored individuals may be able to maintain a professional status and to dispense with a show case, and sometimes even a door plate, but the majority of our craft have to adopt the methods of the jeweller, the tailor, and the florist to make their existence known, and to demonstrate the quality of their productions. This being so, it is sad to have to note the facts that as a rule photographers show their samples very badly. Some of us are old enough to recollect the time when the R. P. S. shows consisted largely of frames, each containing a dozen or more of cartes or cabinets symmetrically arranged under a cut-out mount, the said frames afterward doing duty in the photographer's window or showcase. We have progressed since then; the multiple mount is rarely seen, but the overcrowded window remains, the general idea being apparently suggested by the staging of a greenhouse, the plants being replaced by mounted and unmounted portraits, and the tall shrubs at the back represented by enlargements or oil paintings Such a display does not attract the passer by; he probably gets a vague idea that a photographer is located at a certain spot, but he, or more probably she, does not think of stopping



to examine the display in detail. Window dressing is an art, fortunately one which with a little study can be acquired by anyone who is capable of making a good portrait. The Japanese have a charming custom of placing in their rooms only one choice piece of pottery, lacquer ware, ivory carving, or other work of art at a time, the rest of the owner's treasures being carefully stowed away. By this isolation the beauties of each specimen are thoroughly appreciated and understood. This practice is highly suggestive to all who trade in art products of any kind, even photographs, that they should not crowd their show window, but allow the attention of the possible customer to be concentrated upon a few good pictures which will leave a lasting and favorable impression upon his mind. Modern black-covered hand cameras do not seem promising articles for making a show suggestive of spring yet we can recall a display which showed the connection between spring flowers and photography in a convincing way, appealing not only to photographers, but to all nature lovers. In this instance, the whole of the lower part of the window was filled with green moss, enlivened with primroses, violets, and daffodils; above this were a few cameras upon dwarf stands, the whole being backed up with enlargements of spring scenes, flower studies, and a child portrait or two. This scheme could easily be adapted to the display of portraits, half a dozen of which upon dwarf easels could replace the cameras. The idea is that the flowers catch the eye and lead it to the pictures. Even if such an entire transformation of the window is thought to be undesirable, much may be done by a judicious display of cut flowers in vases or bowls, and growing plants or bulbs in pots, still being careful to keep the number of pictures shown as low as possible, and the quality as high as possible. Other seasons suggest other arrangements, grasses and wild flowers in the summer, and ripe grain and field flowers in the autumn, while between times bowls of cut blooms will always prove attractive. This system may appear too expensive and too troublesome for regular use but it would certainly be productive of good, if indulged in, say, three or four times annually, the regular picture show being retained throughout the remainder of the year.

A considerable amount of judgment must be exercised in the selection of colors, which may be decided when monochrome pictures are shown, but should be subdued for colored work. It need hardly be said that the draping of the window should be in neutral tones, grays or dull browns being the most suitable. In some cases white or cream would be effective provided that

white mounts were not used.

Simplicity and concentration are the keynotes to a successful display, and the student in the art of decoration may glean some useful hints from many of the shops. Some of these still crowd their windows in the old way, but there is a growing tendency to allow plenty of room amid suitable surroundings for the "leading lines." Just a final word. It is much easier to secure variety if only six pictures are shown at a time, than it is if the whole battery is fired off at once and left unchanged for months.—B. J.

Architectural Photography

To my mind this is one of the most fascinating branches of our art. For the photographer with a true appreciation of the beauties of line, light, and shade, there are in many of the cities glorious examples of Gothic work; masterpieces of the architect's genius and skill, offering inexhaustible material for delineation by technical and pictorial expression.

Those wishing to produce serious work should study architecture, and learn the peculiarities of the styles of different periods, and in the results endeavor to give emphasis to the characteristics

of each style.

A rigid camera should be used, with square or slightly tapered bellows, having a large range of movements, particularly the rising front; bearing in mind that it is always better to raise the lens than to make use of the swing back or front.

Too much attention cannot be given to the selection of the point of view; the experienced worker recognizes that this is necessary to do

full justice to his subject.

Each picture should have, where possible, some point of dominant interest or emphasis, such as a beam or patch of sunlight, as a principal high-light.

high-light.
Vertical pictures usually give an appearance of height; very few subjects make a good hori-

zontal print.

Lighting also is very important; from behind there is tendency to flatness; a good side lighting gives breadth; a front light is often effective. There is always a best time of day which will give the most satisfactory rendering. When possible, some time should be spent in the building and the effects noted previous to commencing work.

Purchase the best lenses you can afford, anastigmats by preference. If you only possess one, the most useful for interiors will be found of rather shorter focal length than the longer way of the plate, for example, about 4 inches for $3\frac{1}{4}$ x $4\frac{1}{4}$ plates, $5\frac{1}{2}$ inches for $6\frac{1}{2}$ x $4\frac{3}{4}$ plates, etc.

If you are the fortunate possessor of a battery of lenses, bear in mind to always use the longest focus that will include the amount of subject

required.

Avoid a dead on point of view or symmetrical arrangement, whether of a general view or a detail, and do not try to include too much subject on your negatives.

Arrange the subject on your focusing screen with the full aperture of lens, then stop down to requisite sharpness, and examine with a magnifier. Diffusion of focus is entirely out of place

in this work.

The tripod should be rigid, and the points should be shod with india rubber or cork tips to prevent slipping on marble and polished floors. It should also be adjustable in height, for use on uneven ground, as a low point of view is generally the best, too high a tripod giving an unpleasant uphill appearance to the foreground.

The swing back should always be carefully leveled with a plumb or spirit level, thus pre-

venting drunken or distorted lines.

Include a clear space of foreground when possible and where arches and columns are

included, they should appear complete, and groining should not run out of the edge of the

The lens cap should not fit too tightly, as it is often necessary to cap and uncap frequently, in such buildings as cathedrals where there are

usually people moving about.

Where the exposure is prolonged, persons in dark clothing may be ignored, but if in light garments, will necessitate capping the lens, particularly so should the wearer pause in the front of a dark portion of the view.

Use a rapid plate, well backed. I personally prefer those listed at about H. & D. 200, as they tend to softer negatives than the slower brands.

The golden rule is to expose for the shadows. Underexposure is useless in architectural work. Naturally exposures vary almost with every building but as a guide I have found working in fairly well lighted places, during the summer months, three minutes exposure with f/22 about correct.

In development aim at delicate, soft negatives, with long range of gradation, which means that the developer should be weak in pyro and without

bromide.

To avoid halation, use a well backed plate, give ample exposure. Use the full amount of accelerator to ensure rapid development, which should not be carried too far, stopping before the lower portions of the image are reduced.

Lastly, carry a note book in which write full particulars and conditions of each exposure, this will be found of inestimable value for future working under similar conditions. Remember that successful architectural photography requires stricter attentions to technical details than almost any other branch.—American Annual.

Landscapes

"Any one can take landscapes," is a remark that is often heard among people who have had only a slight knowledge of photography and often also among those of more extended knowledge. It is also true that any one can take them after a fashion, but it is also true that the perfect landscape only comes once in a great while and this is when and only when the light conditions, exposure, and composition are just right. Who is there that in looking over a large stock of negatives has not often come across a perfect beauty in that line, but alas, it is only one out of perhaps some hundreds and it is often a puzzle to the novice why he does not get a larger percentage of these good ones.

There are many landscapes that are nearly always unsatisfactory no matter how or when they are taken and the serious worker had better avoid them entirely, as unless he is satisfied with mere matter of fact photography—and a real artist seldom is—he will derive no pleasure from them. To get the best out of any landscape and do it constantly—not only requires thought and care and a good knowledge of composition, light and shade, etc., but careful thought in using his

instrument and in making the exposure. As a rule an underexposed negative is absolutely worthless and it is better to overexpose rather than under. In working in glens or ravines always expose for the deepest shadows and never mind the high-lights. Such views, however, should never be attempted with a brilliant sun streaming through the leaves of the trees. A partly cloudy day should always be chosen if possible and a time exposure given with the lens

partially stopped down.

The use of diaphragm in landscape work is one of the most important points to understand thoroughly in order to get the best results and the use to which the resulting picture is to be put will largely determine this. If the negative is to be used for lantern slide or stereoscopic work a negative that is absolutely sharp is preferable to any other; but if the camera is a large one and used for direct views only, a much more artistic effect can be had by having only the foreground or principal subject sharp and allowing the view to gradually fade off in the distance. In taking clouds (or landscapes in which they occur) very fine effects can often be had by taking them against the light, but the sun of course should be under a cloud or obscured so that it will not shine nto the lens. There are many excellent books nto the lens. and papers on landscape photography and on this account it is not the writer's intention to write a long article. A few practical hints are often worth more to the worker than a long essay on any subject and it is for this reason these few lines have been written.—American Annual.

Making Pictures Waterproof

For many purposes it would be advantageous for a photograph to be quite impervious to moisture. It is not always possible to keep it under glass; and if it gets soiled or wet it may be spoiled. An easy means of waterproofing pictures is to dissolve celluloid in acctone. The above waterproof varnish is best applied by immersing the picture in the above solution in a shallow dish for a few minutes, after which it is hung up to dry. The varnish can be bottled for further use, as it will keep indefinitely.

Cleaning Picture Glasses

A DIRTY or cloudy glass to a framed photograph is very detrimental to its appearance. The surface of the glass should be kept clean and polished. This is easily done with a number of chamois leather snippings fastened into a bunch with string. A rub over the glass with this will restore the polish with wonderful ease and rapidity. If the glass is very dirty it may be breathed on to facilitate the cleaning, but if the process is carried out at reasonably short intervals the glass assumes a high polish in a moment. For some reason or other the many small pieces answer better than a single sheet of the leather, and they find their way into the corners and edges.



Blue and Green Toning

M. Monge gives the following method for obtaining blue and green tones on transparencies and lantern slides, and as it is a slight variation from other well-known processes it may be useful.

Prepare three stock solutions:

	Potassium citrate	5 per cent.
	Potassium ferricyanide	5 per cent.
	Sulphate of copper .	5 per cent.
(d)	Potassium bichromate	5 per cent.

The transparencies should be printed rather lighter than the finished picture is desired to be, as the process gives a slight intensification.

The first bath is

Solution	(a)				100 c.c.
Solution	(b)				15 c.c.
Solution	(c)		•		15 c.c.

This is a copper toning bath and the transparencies should be left therein until the action has proceeded to the darkest shadows, which can be easily seen by examining the image through the glass, and a few minutes washing should then ensue.

The slide should then be immersed in the second bath of

Water							100 c.c.
Ferric-cl	hlor	ide :	solu	itio	n		20 c.c.
Hydrock	ılori	c ac	cid				50 drops

in which it will turn blue in about a minute, but the solution should be allowed to act a little longer and then the slide immersed in the third bath, which is

Water						100 c.c.
Hydroch	llori	c ac	cid			50 drops

for a few seconds until the faint yellowish tinge of the whites has disappeared. Wash then in running water for three or four minutes and dry.

Green tones are obtained by toning the transparencies first in bath number one and the acid clearing bath and then immerse in

Water	. 100 c.c.
Ferric-chloride solution	. 20 c.c.
Hydrochloric acid	. 25 drops
Solution D	5 to 10 c.c.

The less of solution D that is used the bluer the tone, while with the largest quantity a bright emerald green is obtained. Slides treated by this method have been kept for more than three years without showing any sign of change.— Phot. Revue, 1919, p. 52.

(The greens obtained by this process are some-what vivid when examined by reflected light, but are more dull and opaque when projected on the screen. The blues are not pure blues but have also a somewhat dirty appearance when projected. For prints the process might prove a pleasing variation, and if after bleaching in the copper bath the slide is well washed and immersed in a 5 per cent. solution of ferric oxalate a very rich sepia brown is obtained which is wonderfully transparent in the shadows.

In mixing up bath No. 1 it is important to add the copper to the citrate and then the ferricyanide, otherwise a precipitate may be formed.

—E. J. W.)

Another Intensifier

J. M. STRONGLY recommends the following method of intensification, which he states to be equal to mercury in every way, to give permanent results, and has not the possibilities of staining as the ordinary chromium intensifier, and, further than that, it is not so essential to wash all the hypo from the film. Four solutions are required:

-1	Α				
Potassium bichro					30 gm.
Water		•	•	٠	1000 c.c.
	В			•	
Potassium bromi					80 gm.
Water					1000 c.c.
	С				
Hydrochloric acid	l, c. p.				2 c.c.
Water					1000 c.c.
	D				
Potassium metab	isulphi	te			200 gm
Water					1000 c.c.

For use take equal parts of A, B and C; bleach the negative, then rinse and immerse in D until all yellow stain disappears, and develop with any non-staining developer without bromide.-B. J., 1919, p. 87.

Redeveloping Bromide Papers

MR. E. MANLEY suggests the following method of obtaining various tones on bromide and gas-

light papers, which looks rather promising.

The prints to be toned must be thoroughly washed and bleached in daylight and then allowed to stand in the washing water in day-light, face upward, until the image gains in strength and is of a pleasing pinkish color.

The bleaching solu	LIOI	15 6	ne.		
	Α				
Potassium ferricyani					28 gm.
Ammonium bromide					36 gm.
Water		•			1000 c.c.
	В				
Cupric sulphate .					
Sulphuric acid, c. p. Common salt					4 c.c.
				٠	50 gm.
Water				٠	1000 c.c.
		T			(283)

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	C	2		
otassium bichrom	iate	:		18 gm.
ılphuric acid, c. p	ρ			60 c.c.
ommon salt				100 gm.
'ater				1000 c.c.
ılphuric acid, c. p	p			60 c.c. 100 gm

After bleaching wash in running water for twenty to thirty minutes and redevelop in daylight in one of the following solutions, but the action should be stopped before the final color is reached as the prints dry a little darker.

I		
Metol		9 gm.
Sodium sulphite, dry .		13 gm.
Sodium carbonate, dry .		27 gm.
Water		1000 c.c.
77		
IIa		
Hydroquinone		34 gm.
Potassium metabisulphite		16 gm.
Potassium bromide		4 gm.
Water		1000 c.c.
В		
_		400
Ammonium carbonate .		100 gm.
Water		1000 c c

The following table shows results obtained with the various combinations of bleacher and redeveloper.

Bleacher Used: A. Redeveloper used: IIa, 1 part; B, 1 part; dilute accordingly. Results: Deep purple brown, similar to gold-toned P. O. P.

Bleacher Used: A, B or C. Redeveloper used: Results: Good black from poor prints.

Bleacher Used: B. Redeveloper used: I. Results: Splendid blue-black, velvety shadows as near carbon print as possible; resembles an etching on cream crayon.

Bleacher Used: C. Redeveloper used: IIa, 4 parts; B, 6 parts; water, 2 parts. Results: Deep

brown, fine color, whites very clear.

Bleacher Used: C. Redeveloper used: IIa, 1
part; B, 1 part; water, 1 part. Results: Excellent sepia, equal to sulphided print.

Bleacher Used: C. Redeveloper used: IIa, 2
parts; B, 1 part; water, 2 parts. Results: Very pleasing light brown tone.

The prints do not require fixing.—B. J., 1919,

[While I have not tried this process it seems to me that the last statement is open to question, for with the A bleach we should have silver bromide formed, with B a mixture of cuprous and silver chlorides, and with C silver chloride, on exposure to light we should have something very analogous to the Carnegie-Piper "Puce-colored subbromide," and this is not permanent, and unless development was carried to the extreme we might still have some of the silver halide undeveloped .- E. J. W.]

Silvering Mirrors

Mr. J. Graham gives the following method of silvering glass or celluloid, Two stock solutions are required.

	Stoc	RS	uve	7		
Silver nitrate.						3 gm.
Distilled water	٠	٠	٠	•	•	300 c.c.

Stock Formalin

Formalin (40 per	ce	nt.	con	ı.)		45 gm.
Distilled water Methyl violet .	•	:	•	:	•	450 c.c. 1 gm.

The following quantities are sufficient for twenty square inches of glass: take 90 c.c. of the stock silver solution and add 10 per cent. ammonia solution, drop by drop, shaking the mixture after each addition. The mixture first becomes thick and dark and then clears up as more ammonia is added. A slight excess of ammonia is not detrimental, but the solution should be well shaken after each addition as it often clears quite slowly and only after shaking well. In another graduate should be placed 11 c.c. of the formalin solution.

The glass should be well polished and the wet surface rubbed over with a swab of cotton dipped in 0.5 per cent, solution of tin protochloride (stannous chloride), then rinsed under the tap and wiped with a pad dipped in distilled water, and placed face up in a perfectly clean glass developing tray. The formalin solution is added to the silver solution and the mixture imme-diately poured over the glass. The silver begins to deposit at once and the solution darkens and then clears and the glass should then be removed and rinsed under the tap and swabbed off with a pad of wet cotton. Allow to drain for a minute or two to remove any drops of water by lightly touching with blotting paper. Allow to dry for half an hour or so and it can then be polished with fine rouge.

The best temperature for silvering is 70° to 80° F. The methyl violet keeps the surface brilliant and unclouded. The priming bath of tin gives a much more adherent coating.—J. B.,

1919, p. 155.

[This is a variant of the method first suggested by Lumière and R. W. Wood gives a good working modification in Physical Optics, p. 281.-E. J. W.1

A Bichromate-mercury Intensifier

Mr. D. CHARLES states that if a thin negative is bleached in the well-known potassiumbichromate and hydrochloric acid intensifier and washed and immersed in the mercuric iodide, very great intensification is obtained either by sulphiding the image or redeveloping with hydroquinone. This process is especially useful for line work.—B. J., 1919, p. 172.

A New Developer

Mr. H. A. Lubs describes in full the preparation of para-aminocarvacrol, C₂H₃,CH₃,OH.CH₂,-H₂N, from p-nitrosocarvocrol, which he states to be an excellent developer, better than paramidophenol but not quite equal to metol. Carvacrol, the starting material, is prepared from cymene, and it should be therefore comparatively cheap as p-cymene is practically a waste product at present .- Jour. Ind. and Eng. Chem., 1919,





Peace

We all believe that world peace is about to come; at least we all hope and pray for it. While as Americans we saw very little of the war and cannot realize the loss which other countries have suffered, at the same time we rejoice that peace is coming and coming so soon after we entered the war.

We in the photographic trade can look back and marvel at what has been accomplished under the circumstances. The photographers have had a wonderful business; the manufacturers and dealers have been put to their wits' ends many times to secure goods, but they have succeeded fairly well, and now that it is all over everyone

is fairly well satisfied.

Some people have the idea that prices will come down immediately, but if they will study the situation very carefully we feel positive they will agree with us that there will be very few declines in prices during the coming year. will take a year or two to get things back to their normal state.

During the past year or two there have been thousands and hundreds of thousands of men and women who have been unable to take their usual vacation; they have not thought of photographs or photography, but they will during the next year or two, and they will take the place of the many soldier boys and soldier boys' families that have been photographed during

the past year. Let us trust that peace will come and peace that will mean that for us and future generations differences between countries can be settled in some other way besides by armies, and let us for this year and the years to come try and forget the war and the evils and look after our boys and the future prosperity of our country.-

Ohio Photo News.

The Future

"What is your opinion of future conditions?"

asked a successful business man.

As there was no satire in his voice, I felt complimented at the question but I felt equally humiliated at being unable to give any comprehensive answer.

The best I could do was to reply, "I am by nature an optimist so I at least have pleasure

in the sincere belief that each day will see a marked improvement in conditions, although one who reads cannot ignore certain signs of trouble, but I strive to minimize the impression such signs make and to turn from them quickly to signs of greater welfare. And it has been my experience," I said, "that the men who point to prosperous times have much stronger arguments to substantiate their positions than have those who accept and exploit opinions of disaster.

"There may be an abundance of labor, but there will be, too, an abundance of work. All that is needed is courage.

"It is inconceivable to an optimist to see a condition of depression long prevail in a country so prosperous as ours. There may be temporary

slumps but they cannot last long.

And then it occurred to me, what a wonderful country this is! How full of opportunity! What undeveloped resources awaiting initiative! And that the more, who through fear hold back, the greater the chance for those with courage who proceed.—A. BOOSTER.

The New England Convention

On April 7, 1919, the second meeting of the board of officers of the P. A. of N. E. was held at Hotel Lenox, Boston, Mass.

There was a full board present, consisting of

W. H. Manahan, President; E. A. Holton, Treasurer; A. K. Peterson, First Vice-President; Wm. H. Noetzel, Second Vice-President, and Earl G. Mills, Secretary.

In addition to the board, there were members of the National Photographic Exhibitors' Convention Bureau; J. C. Abel, Secretary of the P. A. of A., and L. B. Painting, present.

President Manahan suggests that our conven-

tion be held at Springfield, Mass., September 8, 9, 10, 11, 1919. Motion made to this effect

seconded and carried.

Motion made, seconded and carried that a prize of a solid gold medal be awarded to the person exhibiting the best three portraits not smaller than 8 inches in length; no name to appear on face of such exhibits. Entrance fee to all photographers, not members of the Association, \$2, to be applied as membership fee.

Motion carried that a prize (probably a cup) be awarded to an employe exhibiting two best

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portraits not smaller than 8 inches in length, the work to be entirely his own. Award to be donated by J. C. Abel.

Motion carried that a certain time be set aside in memory of the late Joseph C. Dawes and at that time a short history of his career be read to the convention.

After a few minor details were taken care of, the meeting adjourned, subject to the call of our

EARL G. MILLS, Secretary P. A. of N. E.

"Photography and Fine Art"

By HENRY TURNER BAILEY. 96 half-tone reproductions of original photographs and oil-paintings. Quarto. Large octavo. 124 pages. \$1.50. Worcester, Mass.: The Davis Press.

This interesting book is a revision of a series of illustrated articles the author first published in The School Arts magazine. The articles were written that they might promote a more intelligent and extensive use of the camera in the public schools as an aid to knowledge and taste. They schools as an aid to knowledge and taste. are reprinted here, the author tells us, that they may prove useful to amateur photographers everywhere. The aim of the book is esthetic. Nothing therefore will be found in it about the mechanical or chemical technic of photography. Those who desire help in that direction will have to look elsewhere. Mr. Turner, who is a wellknown art critic, endeavors to illustrate adequately those principles of composition and of beauty which, in his own experience and in the close observation of others, have been found to be illuminating and dynamic. The volume is well printed and will be of value and interest to pictorial photographers.

More German Trickery

For years before the war, in different photographic publications, here and abroad, it was stated again and again that the bubbles that appeared in German-made lenses of Jena glass were owing to the nature of the product employed in their construction; that this was no sign of inferiority but, on the contrary, an indication of genuineness; that these blemishes were of no consequence, were rather to be desired, etc. well-known American photographer and exhibitor, who makes his own lenses, now with the U. S. Army of Occupation, photographic branch, in a letter just received in this country, states in substance: "I have come across a large number of German lenses, captured and otherwise, and find that they are flawless without exception, even the very largest, and I have learned that lenses free from defects were always kept in Germany and those not so were sent out for sale in other countries; also, that the Germans have been responsible for the publication of the statements above referred to, thereby intending to deceive the general public so they could work off their inferior goods."-Flambeau.

Photographers' Association of America

MANY photographers will be well pleased to learn that the officers of the Photographers' Association of American have definitely decided that the time is ripe for renewing the annual meetings. In the years 1917 and 1918, conditions did not warrant the holding of a meeting with any chance of the success which would naturally be looked for, and it is therefore to be expected that the meeting which is scheduled for the last week of July this year will have greater attraction for photographers than usual. In the first place, we have an unusually delightful place in which the meeting will be held. The facilities for meetings and for entertainment and for lodging are more than adequate. There is the finest bathing beach in all the country and there is always an atmosphere of sociability, which must ever form one of the chief features in a big meeting of this

In the second place, the location, Cedar Point on Lake Erie, Ohio, midway between Toledo and Cleveland and about the same distance from Columbus, with water service direct to Detroit and railroad facilities on several lines from all parts of the country, and further with a summer resort rate, makes it possible for photographers from almost any point to reach there quickly and in comfort. It is merely an overnight trip from New York or Philadelphia, or from below Cincinnati, from St. Louis, from Chicago. It is the overnight center of a photographic population of over 10,000. Is there any reason, therefore, why the officers of the Association should not anticipate the largest attendance of any convention yet held?

Let us figure for a moment how a meeting of of this nature applies to the actual work of a photographer. A national meeting of this kind gives instruction, both theoretical and practical, along both business and art lines; it gives the opportunity for the study of new apparatus and new processes and for the study of the work of other photographers; it gives the attendant the chance to renew acquaintances with old friends and to make new acquaintances, which lead to interchange of ideas, and so give renewed interest in the profession; it makes for selfrespect, for in meeting with men who have made a success, one naturally goes away striving harder than before for a better standard of living and working; it gives an excellent opportunity for advertising in your home town and it lends confidence to your customers when they learn that you have been mixing with other photographers, learning new ideas and new styles. This is at least an answer to those who say, "What do I get out of a meeting of this kind?"

Let us look for a moment at some of the features which will mark the program at the Cedar Point meeting. There will be demonstra-tions which will meet the wants of every one interested in making photographs or in selling them. The individualists in photography will be represented by Eugene Hutchinson, of Chicago, who not only can hold his audience in demonstration, but is willing to be backed up against the wall and answer the inquiries of any and every one who is interested in his ideas and in his work. The young worker in the field will be represented by Jerome Chircosta, of Cleveland, a man who was trained as an engineer, but whose flights of fancy went beyond mere steel and iron and who is making a name for himself as a portraitist of the better kind. Lighting and the composition of the picture are always difficult subjects and no man can handle this better than our ex-President Will H. Towles, author of "Balance of Light and Shade in Portraiture." Many photographers are not so much interested in individual style in photography as in getting out good, honest, bread-and-butter work, stuff that pleases the customer, pays the bills and fattens the bank account. Few men in this country can equal John Schneider, of the Baker Art Gallery, in this work.

Taking another phase of photography which is steadily coming to the front and which will become more important as its availability is recognized by the manufacturer and general advertiser; namely, photographs to be used for advertising purposes; this subject will be covered by no less an authority than the man who almost every year wins the first prize in the Eastman advertising competition—William Shewell Ellis.

That the women of the profession are taking a prominent position in photography is fully recognized and they will have a good portion of the program, not merely because they are women, but because they will have something interesting to tell to every photographer.

Now, coming to the lecture part of the program: first and foremost, Capt. Edwin H. Cooper, who spent a year at the front, received two citations for his bravery under fire, and who has a wonderful story to relate of how photographs are made from the trenches, will be with us at Cedar Point.

Giving way again to the younger generation, Herbert S. Stokes, of the Breckon Studio, of Pittsburg, will give an interesting talk on "Efficiency Methods in the Printing Room." Mr. Stokes was one of the "hits" of the Pittsburg Convention, and it is safe to say that he will have much to tell of real value, not only to employers, but to employees.

There will be two or three sessions covering the use of the air-brush in enlarging. The airbrush is steadily growing in use in every up-todate studio and we shall have a man there to tell and show its use. Several other talks are scheduled, but we have not the space to go into them at this time. A special effort will be made to interest commercial photographers at this meeting. There will be a business talk from a commercial man and there will be a special exhibition of commercial work in the nature of a sweepstake competition. Every entry in this competition will pay \$1.00. The total amount will go toward the buying of a cup, which will be awarded to the best set of commercial pictures, and the judges will be a photo-engraver, an advertising man of repute and a buyer of commercial photographs. There will be no prizes offered in the general exhibition of portraits, but there is always intense satisfaction in showing one's pictures at the national and comparing them with the other fellow's.

Particular pains will be given this year to the

proper display of the pictures, and of especial interest will be a separate collection of thirty prints each from five leading photographers, whose pictures, by the way, will be the subject of a critical talk by President Ryland W. Phillips.

The manufacturers will be present in force. At this time we expect there will be more manufacturers attending this Cedar Point meeting than in any previous year. They will have much of novelty to show and they will, of course, do their best to make your attendance at Cedar Point a pleasant one.

For entertainment, there is Cedar Point itself, "Queen of Bathing Resorts;" there will be dances galore; there will be a banquet with side features, which will make you sit up and take notice; there will be an afternoon spent on the beach with water ball games, running races and all other kinds of fun; there will be beach parties at night, which will make you feel you never had such a good time before. It is, after all, not so far off to this annual meeting. A few short weeks are time enough to get your exhibit ready. The Secretary, at 421 Caxton Building, Cleveland, Ohio, is ready to help you reserve your rooms. He wants to know whether you will be there; so write him, and, if you have not paid your dues for this year, send in your \$2.00 or \$2.25 and get your membership card and your brass sign and the official journal of the Association.

Exhibits at Boston Y. M. C. U. Camera Club

THE Boston Y. M. C. U. Camera Club had nearly a hundred pictures by its members in its annual exhibition during March. Blue and red ribbons were awarded in each of five classes, with a gold star for the best picture, Mr. Seelig's "Adoration of Buddha." The club is giving monthly exhibitions of the work of some leading American pictorialist, and these are attracting much interest.

Rochester Section P. P. S.

The following officers were elected at the annual meeting of the Rochester section of the Professional Photographers' Society, recently held: President, John N. Heiberger; Vice-President, Irving Saunders; Secretary and Treasurer, Burton J. Holcomb; Executive Committee, William Furlong, Irving Saunders, Charles Goetz. Members of the organization discussed ways and means of protecting the public against irresponsible agents. The practicability of licensing photographers was discussed.

Chautauqua Lake Section, P. A. of N. Y.

THE sixth annual meeting of the Chautauqua Lake Section of the Photographers' Association of New York, was held April 9, in the studio of T. Henry Black, Jamestown, N. Y. Officers for the ensuing year were elected, as follows: Chairman, T. Henry Black; Secretary and Treasurer, J. Stuart Husband; Executive Committee, Mrs. Kahabka, of Silver Creek; B. A. Whitney, of Little Valley, and Carl Holmquist, of Jamestown. Following the election a pleasant social time was enjoyed. At a later meeting plans

will be perfected for a summer gathering. A letter from B. A. Whitney, of Little Valley, was read conveying his regret of being unable to be present on account of illness.

Aërial Photographic Mapping

No development brought about in the heat of intense war effort has greater peace time significance that that of aërial photography; aërial photography has opened an entirely new field of endeavor. Whereas the ordinary map surveyor would have to make his calculations on a yearly basis, the aërial photographic surveyor estimates from the standpoint of hours. By aërial photography, a map just as accurate as that produced by a surveyor, and far more comprehensive, can be made available within fortyeight hours after the flight to take the exposures.

When the armistice was signed, a number of automatic and semi-automatic cameras had been produced, ranging in size from the 4 x 5 camera with 8.5 inches focal length to the enormous cameras of 50-inch focal length and 8 x 10 plates. One of the most ingenious of these cameras is the Eastman K-1. This camera is entirely automatic in its action. It is set on the floor of the fuselage and operated by a controlled wind turbine. Roll film is used, and 100 pictures 8 inches by 10 inches in size can be made without reloading. The use of film of such large size presented a very great problem because of vibration. The difficulty was overcome by providing a vacuum suction which accurately holds the film in the recording plane without liability of static. This K-1 camera can in one continuous trip at an altitude of 10,000 feet take sufficient exposures to cover an area of some 200 square miles.

Photographic mapping can be accomplished by flying at a height of 10,000 feet, using the K-1 automatic camera, which will record approximately two square miles of area at the height named at each exposure. The photographs gathered on a mapping trip can be pieced together in an accurate mosaic by a method of triangulation. The photographic map on completion may be traced and interpreted into the usual form of topographical map. The work of developing and printing, piecing the photograph in mosaics, and tracing can be accomplished in a remarkably short time.—M. A. KINNEY, JR., in Flying.

Don't Be Fooled

JUST a word of warning to photographers on the subject of chemicals. All sorts of combines, conditions and companies are organized to make large profits by placing on the market chemicals at all kinds of prices. Here is an instance: Quite recently we came across a substitute for Metol and it was advertised to us as being nearer Metol than anything else because it was more soluble than any other so-called substitute, and it was. We took some and had it analyzed by an expert and we found it more soluble because it contained one-third of common salt. In other words we were only getting two-thirds of active developer, one-third was waste.

It is better for every photographer to buy chemicals which have on the label the name of some reliable manufacturer or dealer. A few dollars saved in price on a lot of chemicals may mean a great expense in loss of paper and time.

A Live House-organ

The Bachrach Studios of Boston, New York, Baltimore, etc., have issued a monthly house-organ, entitled P O D.—Photographs of Distinction—which is made up of anecdotes of the heads of the firm and the employees, studio ideas, and coöperative suggestions. This is another live, up-to-date idea from this bright organization.

Aërial Photographers Have Formed Association

NEARLY 4000 photographers, both professionals and amateurs, were in the Photographic Branch of the Air Service during the War. An association of these has been formed and has recently sent out a plea for all men who were members of this branch to join and thus help preserve the friendships and objects of the Aërial Photographic Service.

Enlisted men at the Army School of Aërial Photography, at Rochester, took the initiative in this movement and formed the U. S. Army Aërial Photographers' Association last December. Honorary members include Lieut.-Col. John S. Sullivan, Major James Barnes, Capt. M. A. McKinney, Jr., Lieut. William D. Wheeler, Capt. Harry A. Wilsdon, Lieut. Andre H. Carlier, Mr. George Eastman, Mr. W. F. Folmer and Dr. C. E. K. Mees, all names well known to the photobranch men. The president of the association is Henry Van Arsdale, Jr., 25 West Forty-fourth Street, New York City. Communications regarding membership, etc., should be sent to Carl Kattelmann, Secretary-Treasurer, 617 H Street, N. W., Washington, D. C., or to Wickham Harter, Assistant Secretary-Treasurer, 636 East State Street, Trenton, N. J.

It is the intention of the association to obtain a large membership so that it will be possible to issue, at intervals a publication dealing with matters of aërial photographic interest, to hold a large reunion in Rochester this summer, to conduct local reunions, furnish membership pins and generally keep aërial photographic interest alive.





WORKROOM

ONTAINING THE LATEST PROCESSES, FORMULAE AND APPLIANCES NEEDFUL IN THE ART OF PHOTOGRAPHY FOR THE OPERATOR & WORKER

Practical Methods in Photographic View Publishing Lithographic Transfers from Bromide Prints Formula for Opaque Some Useful Suggestions for Dark Room Fittings New Autotype Carbon Tissue Reproducing Valuable Negatives Removing and Transferring Gelatin Films from Cracked Negatives Oil Painting Photographs Cut-flower Photography Spring Cleaning a Camera How to Mix Fixing Solutions Photographing Farm Animals Bromoil: The Ideal Process for the Individual Worker Replies to Queries Photographic Materials and Processes Patent News Autotype Trichrome Tissues Second-hand Lenses



THE WORKROOM

By the Head Operator



Practical Methods in Photographic View Publishing

Retouching and Improving Landscape Negatives

The landscape negative, when it leaves the fixing bath, may be that rara avis the perfect negative; perfect, that is, from the technical point of view, one that leaves the critical photographic mind no room for suggesting improvements. Too often it is far otherwise. Setting aside defects arising from personal errors in exposure and development (which even in these days of automaticity will occasionally arise), there are many causes that may conspire adversely to affect the quality of a negative of which the photographer is perfectly cognizant at the time, but which are quite beyond his control. All he can do is to seek some means of compensation by after-treatment of the negative.

In spite of actinometers and exposure tables subjects will crop up, and not infrequently, in landscape work, which defy them both and throw the photographer upon his own resources. He can only give a more or less haphazard exposure and trust to his skill to rectify in some measure by subsequent methods the under- or over-exposure that he will probably find. Or a long journey has been taken to some remote sphere of action and the day that promised so well reverses its intention, and when the field of operation is reached the only chance of getting crispness in the negatives rests with the photographer's ability to put it there by judicious retouching and cognate methods.

Under- and overexposure will usually be the first defects to arrest the attention in dealing with a batch of negatives. They are self-evident from the first and do not admit of any indecision as to the desirability of attempting some means of improvement. The gelatin printing-out papers so much in vogue have made it possible to obtain a fairly satisfactory print from negatives having an amount of underexposure that would prevent their being successfully printed in any other process, and conversely, papers of the "gaslight" type have done the same for overexposed negatives. By an unfortunate ordination neither of these types of paper seems to appeal to the view-buying public, and it is quite necessary to improve both under- and over-exposed negatives to the extent of their giving at least a passable print in processes that demand a more or less perfect negative.

It is far easier to restore quality to an overexposed negative than to one with an equal degree of underexposure, and the methods of doing so are both more certain and more simple. I have found very few overexposed negatives that were not amenable to a course of energetic reduction followed by intensification, and this method, patiently repeated, will nearly always restore a negative that was quite hopeless to a condition capable of giving a good print. In dealing with this class of negative it has first to be reduced with a strong ferricyanide reducer, the plate having previously been well soaked to soften the film; and should any patches on the film, such as finger marks, show repellant action, these must be perfectly removed by washing the film with a tuft of cotton-wool saturated with ether or acetone. The ferricyanide reducer I use is:

The amount of reduction is obviously regulated by the amount of overexposure and the opacity of the negative; it should, however, be sufficient to clear the deepest shadows, though in extreme cases I prefer to intensify the negative before completing reduction, and again reduce, as being the safer course. It goes without saying that one would not take such trouble unless the negative were commercially worth it, and unless it were impossible to replace it in less time. Granted the desirability of producing a working negative, the greatest care and patience should be exercised in bringing about a satisfactory result.

Thorough washing should follow the reduction before intensification takes place. The intensifier I myself prefer is Dr. Eder's chromium intensifier, which I have used for many years with perfect satisfaction, and as a reliable work-room intensifier it is very difficult to beat. At the same time mercury, followed by redevelopment with ferrous-oxalate or hydroquinone, is almost as satisfactory from a photographic point. On the completion of intensification it will be apparent how far the operation has been successful. If the negative looks clear enough in the shadows but lacks "pluck" reintensification is indicated, but if it still looks foggy and flat the process must be repeated again.

An alternative course to the above, and one that has given very satisfactory results in my hands, is to reduce with the ferricyanide reducer and intensify with Monckhoven's cyanide of silver formula. If subsequent clearing of the shadows is necessary it must be done with a plain solution of hypo, and the cyanide of silver intensifier repeated. By this process it seems possible to give a much steeper gradation to a negative, and I certainly have saved some hopeless-looking negatives by its aid. I much prefer the former method, however, both on the score of permanence and efficiency.

Before leaving the subject of overexposed negatives I would mention a dernier ressort for



the pariahs in this class of negative. reduction and intensification have been repeated without attaining the desired end, make a transparency on a slow plate, giving slight under-exposure and seeking to attain a hard result, from this make another negative, also on a slow plate, and develop for steep gradation. fully avoid fog in both transparency and negative, obtaining opacity rather by intensification than by forced development. Hydroquinone and caustic soda is the most useful developer for the occasion.

Underexposed negatives have very generally been consigned to the scrap-heap by those in photographic authority, and happy would the professional photographer be if he could follow their advice, but it is occasionally as necessary to make the most of a negative underexposed as of one overexposed. Unfortunately it is not possible to deal so successfully with underexposure; the negative will always remain underexposed, and the prints show that such is the case. All that can be done is to mitigate the evil as far as possible. The underexposure may be generally distributed over the whole of the plate, as, for instance, when photographing a woodland scene where the different planes have all the same photographic value; or it may be confined to one portion of the plate, a distant view, for example, with heavy foreground of trees and rocks in shadow. In the latter case the sky and open landscape portion of the negative is usually well exposed and capable of giving a satisfactory print, but the foreground is too lacking in opacity to show anything but a black mass, except here and there, where prominent objects have reflected a certain amount of light.

The best treatment for such a negative, after a thorough soaking in plain water and careful scrutiny for grease marks, is to paint over the foreground with the well-known uranium intensifier, diluted sufficiently to ensure rather slow action. A large camel-hair brush is the most suitable tool for applying the intensifier, as the outline can be more closely followed. It is better to go over the outline, where it comes against the distance, than to keep under it; in the former case the encroaching intensifier can be easily removed when the negative is dry with a fine brush dipped in a solution of bicarbonate of soda, but if the uranium intensifier stops short of the outline, a dark zone is got in the print between the foreground and distance. The intensification should not be taken too far, otherwise the high-lights that exist in the foreground will become too opaque and print chalky. The negative is now very carefully washed, not under a rose or by letting a stream from a tap fall upon it, but by placing it upon an inclined plane and letting a stream of water flow evenly and gently over it until the yellow of the ferricyanide has been removed.

From long experience I have considerable faith in this method of improving the printing quality of an underexposed negative, and have recently made quite usuable negatives from some that lived perilously near the scrap heap. If the washing is carefully done the uranium brown is (or appears to be) discharged from the denser high-lights more quickly than from the barer

half-tones and shadows. It is better to underthan overintensify, as when dry the brown color is very non-actinic, and if on taking a proof the foreground still prints too dark, printing may be retarded by a coating of matt varnish or tracing

For local intensification of underexposed areas in a negative, such as show detail but lack printing opacity, Lumière's iodide of mercury intensifier is most useful, as one can see the exact result, and gauge its relation to the rest of the negative. am aware of the charge of impermanence this intensifier carries, and am bound to admit that I would hesitate to submit a valuable negative to its action, but when it is a question of probable impermanence on the one hand and the dust heap on the other I choose the probable and remote contingency. It certainly has been too useful in my hands for me to feel other than

grateful to it.

When a plate has been generally under-exposed the resulting print is little more than a mosiac of high-lights and shadows; what halftone exists in the negative is lost in the print. The most satisfactory course with such a negative is again the uranium intensifier, followed when dry by careful retouching among the half-tones. If the high-lights are very chalky the negative should be matt varnished and the lights scraped out with a sharp knife. When all has been done that can be done, without too much evidence of "doctoring," a carbon transparency is then made, which again is carefully retouched, and a new negative made embodying the improvements. It would exceed the space at my disposal to enumerate further the many dodges that exist for making the most of under- and overexposed negatives. Those I have described have stood loyally by me in many a tight corner, and I believe that by them the most can be made of a negative that should properly have never been

Retouching seems so generally associated with portrait work that few unacquainted with the routine of a landscape publishing house would consider that it could have any application to landscape negatives. There is, however, always considerable room for hand-work on any series of negatives taken under varying and not always satisfactory conditions. Negatives taken in a diffused light are especially amenable to pencil retouching, more particularly when architectural features exist in them. An illustrative instance occurred recently in my own work. A general view of a small watering place had been taken under rather adverse conditions of lighting; the town, backed by some low hills and an estuary, scarcely stood out from its background, and a rather imposing church tower that should have attracted the eye at once almost escaped notice in the print. Half-an-hour's careful retouching completely altered matters. Judicious strengthening of the angles of the church tower gave it the necessary prominence, and high-lights on various portions of the town caused it to stand out from its background of hills. A caution may be given against over-loading the negative with hand-work; great restraint is necessary, otherwise the print will be infinitely more undesirable than it was in the negative's original condition.

It is not the amount of work done that improves,

but the little in the right place.

The knife is scarcely less useful than the pencil in landscape retouching, and many objectionable features may be removed by its aid. only the wealthy soap-companies would purchase for advertising purposes those negatives with the foregrounds of snow-white linen, half the office of the knife would be gone at once. "There are of the knife would be gone at once. six washing days in each week in North Wales, otherwise it would be an ideal country for photography," once said an eminent landscape photographer to me, and it is irksome in the extreme patiently to pare out of existence a line filled with the weekly wash of a workman's family. Before commencing to use the knife on the film the negative should be thoroughly dried, any softness of the film being fatal to clean work. The patches of obtrusive objects that have been removed by the knife usually require working up to the general effect of their surroundings with either the pencil or brush and color. Useful and indispensable as are the knife and

pencil they cannot compare with the process of abrading by methylated spirit—"rubbing-down," as it is familiarly called. No process I know of will effect such wholesale improvements in a series of negatives as the tuft of linen and methylated spirit, and very few negatives are made that cannot be improved by rubbing down some portion of them, however perfect they may leave the developer. Wherever there exists a patch in the negative that prints too white for harmonious rendering-a patch of sunlight, a white chalk cliff or wall, water too high in tone, all may be set right with methylated spirit.

One danger the process possesses; if the rubbing down is long continued, the water in the spirit is absorbed by the gelatin and the operator may suddenly find pure, unadulterated daylight coming through the dense patch. I prefer to dehydrate the spirit with carbonate of potash, keeping some especially dehydrated for the purpose of rubbing down. If the process is longcontinued it is a wise precaution to lay the negative aside now and then to thoroughly dry and

Small portions of the negative that require rubbing down are best treated with an artist's fine-pointed stump dipped in the spirit. Large portions of over-dense foreground and masses of trees or rocks can expeditiously be lowered in tone by mixing with the spirit on the cushion fine-sifted pumice powder; this, however, is not admissible where areas of even tint exist, as the surface of water for instance; any deep abrading marks made by the pumice powder would be likely to show.

Another good office rendered by this method of rubbing down is in the case of overexposed negatives that print flat in spite of the treatment indicated earlier in this article. This consists of rubbing out the heavy shadows to a greater or less extent, and so giving some relief to the print by introducing darker portions.

The subject of this article would be incomplete without some reference to the sky portion of the negative, a portion treated very cavalierly by many, if not most, photographers. be a rule to make the most of any cloud effect

that exists in the negative by modifying it in such a way that it prints harmoniously with the landscape portion. Very frequently a sufficient cloud effect exists in the negative but requires local reduction to enable it to print with the If from overexposure the cloud landscape. masses are too monotonous in tone, their edges, in the direction of the lighting of the picture, may be relieved by going over them, on the reverse side of the negative, with some opaque color. Quite often all that the sky portion needs to give it the same printing value as the rest of the negative is a little rubbing down with methy-lated spirit. If the sky prints through as an even tint in the print, artificial clouds may be resorted to by working them in on the reverse side, and they certainly are better than "bald-headed" prints, but unless skilfully done they do not commend themselves. I knew one firm who ground their negatives on the reverse side and had the clouds painted on the ground surface by an artist; the clouds themselves were admirable examples of handwork, but the anachronism was most painful. It is much better to block out a sky portion that fails to satisfy and double

print from a photographic cloud negative.

The customary way of blocking out a sky is to go round the outline of the landscape with a brush and opaque color and fill up the remaining portion with the same. Too frequently the result of this method is a crude outline that bears most evident traces of a trespassing brush. To take a brush and opaque color along a distant horizon is to destroy at once all sense of aërial perspective. Whenever it is possible to do so the sky should be blocked out on the reverse side of the negative, and if a distant horizon is being dealt with the medium should be gradated toward it so that no decisive line of separation may be apparent. The following method enables this to be done very quickly, and is a method of blocking out skies that I prefer to any other, as there is no evidence of it in the finished print.

Prepare a mixture of quick drying gold size and turpentine, roughly, two parts of gold size to one of turpentine, but the amount of the latter requires adjusting to the quality of the gold size. The mixture should flow like thin collodion. If necessary, filter, or decant after standing several days. Thoroughly clean the reverse side of the negative and flow the vehicle over the sky por-tion, taking every care to overlap the junction of sky and landscape. With practice it is astonishing how closely the outline of the landscape can be followed with the vehicle, but if it encroaches quite considerably on the landscape side the only inconvenience is a little extra work

As the negatives are coated they are placed in racks to drain, not too close together, and if the gold size is good, and the proportions of it and turpentine suitable, in a couple of hours or so the vehicle will have become quite tacky; when touched with the tip of the finger it should just take an impression without coming off on the finger. On the degree of the tackiness the success of the operation depends, and only experience can decide this point.

Take the negative in the left hand, with the sky portion toward the body of the operator, and well illuminated by transmitted light, either from a mirror or sheet of white cardboard set at an angle. With the right hand take a fairsized tuft of cotton-wool dipped in fine electrotypers' plumbago and draw it gently across the sky at the zenith. The plumbago will adhere to the vehicle and give perfect opacity. Keep the cotton-wool well charged with the plumbago and gradually vignette upward toward the horizon, until on reaching it the sky has been blocked out except just at the juncture, where one has been vignetted imperceptibly into the other.

With many subjects, where trees and buildings project into the sky it is neither possible nor necessary to work so circumspectly, but the leading may be carried right up to and just over the obtruding objects and afterward removed in a manner to be explained. All the negatives having been treated they are now carefully baked before a slow fire for several hours to drive off the turpentine and harden the gold size. When the baking has effected its purpose a hard film of plumbago remains that will stand years of fair usage.

Those negatives in which the outline remains untouched need nothing further done to them, but where the lead has encroached on the land-

scape this needs removing.

To do this lay the negative on a retouching desk and carefully scrape away the lead with a sharp-pointed knife, being careful to keep just on the outline. If the vehicle itself has been flowed over the landscape portion it may, if thought desirable, be removed with a rag moistened with turpentine, and I do this myself, as in course of time it becomes discolored and retards printing. At first, though, it does not much matter.

Tracing paper is a most useful article in the hands of the landscape retoucher. The best way of using it is thoroughly to damp it and allow time for expansion. Then, having coated the reverse side of the negative with a solution of gum arabic, lay the tracing paper down and press into contact all over. When dry the parts requiring removal can be cut out with a sharp knife. If the tracing paper itself does not sufficiently protect those parts it is intended to, additional opacity may be given by working on the paper with a soft lead pencil, or fine plumbago. On the other hand, if the tracing paper blocks out too much light in places it may be rendered more translucent by going over it with the mixture of turpentine and gold size above given.

I am aware how very many things which are cognate to the subject of improving landscape negatives are omitted from this paper, but I have confined myself mainly to the methods with which I am most familiar, and which are in daily use by myself, leaving a large number of really excellent hints to be gleaned from the pages of photographic literature.—G. T. HARRIS in B. J.

Lithographic Transfers from Bromide Prints

The Bromoil process has for several years had an important application in the lithographic trades as a means of readily making enlarged or reduced productions of line or "stipple" copies. The method also lends itself to the production of coarse-grained half-tone lithographs. In this process a negative is made from the original line or tone drawing, or from an existing reproduction. From this a bromide print is made of the size required, which is subsequently treated by modified Bromoil process so as to become transformed into a lithographic transfer.

Details are given below of a method which has been produced after numerous experiments. These were undertaken by the writer with a view to obtain general reliability and ease in results.

Character of the Negative

The negative may be made either on a dry plate or by the wet collodion process. It must be quite sharp. Line negatives should be made with a fairly large stop, or there will be a slight diffusion of detail in the finer lines. This is due to the fact that the anastigmat lenses generally in use are designed primarily to work at large apertures. F/16 to f/22 is about the correct stop to use. Half-tone negatives must have the dot formation well joined in the high-lights. The particular screen to use for half-tone work must be calculated. For example, if the print from the negative is to be enlarged two diameters and a 75 lines per inch grain is required, the negative must be made with a 150-line screen.

Making the Print

The ordinary copying camera may be used for making the print, the negative being rigged up a foot or so in front of the copy board, which is covered with white paper, so as to reflect light through the negative. A better way, when work is to be done in quantities, is to use an enlarging lantern. Whichever method is adopted, care must be taken to focus quite sharp, and again to use a fairly large stop.

The most suitable developer is the regular amidol or diamidophenol formula, using plenty of bromide. The fixing bath must consist of plain hypo and water, and nothing more. Exposure should be just long enough to produce a full strength deposit in the finest lines. Development should be full. After fixing the print it should be washed for not less than ten minutes, and then dried.

Making the Transfer

The print, when dry, is ready for bleaching. This should be done by means of the following bath:

	л	
Copper bichloride Ammonium chloride Hydrochloric acid,	60 gr. 240 gr.	5 gm. 20 gm.
about Water	20 drops 10 oz.	2 c.c. 400 c.c.
	В	
Sodium bichromate Water	12 gr. 2½ oz.	1 gm. 100 c.c.

For use take 2 oz. (50 c.c.) A, \(\frac{1}{4}\)-oz. (6 c.c.) B, and 4 oz. (100 c.c.) water.

The print should be fully bleached in about two minutes. Occasionally a strong print will fail to bleach right out. The partly bleached portions will, however, take the ink quite well. After bleaching, the print is washed for not less than four minutes in running water.

While the print is washing the inking slab should be got ready. Take a little retransfer ink on the end of a palette knife and rub it out on an old litho stone, or other suitable slab, thinning it down with xylol or benzole. Turpentine is

unsuitable for this process.

The washed print is now blotted off, and laid on a sheet of zinc or glass. Take a fairly tough letterpress roller, or better, a rubber-covered roller, and distribute the ink all over the inking slab, diluting with xylol until the roller has a tendency to skid over the surface of the slab. Now roll up the print with the roller in this condition. At first the print assumes a uniform gray tinge, and then, as the xylol evaporates, the stiffening ink leaves the whites and adheres more and more to the bleached parts. In a few seconds the maximum effect is reached and the rolling stopped.

The print should at this stage appear full of detail and of a grayish-black color. There may be a very thin film of ink left upon the whites. In order to remove this, take a piece of thoroughly wet cotton-wool and rub lightly over the print until clean. The transfer is then ready for

the lithographer.

Weak Prints

Sometimes a print is too weak in character for the bleaching solution to act with full effect. In this case it will be found that fine details do not ink up. Such a print may be saved by a redevelopment operation, as follows: Clean all ink from the surface with a piece of cotton-wool moistened with xylol, and then put it in an ordinary amidol developer, such as was used to make the print originally. It quickly blackens, and should be washed for four or five minutes, when it may be rebleached in the Bromoil bleacher. No fixing is necessary before rebleaching. The print will be found to have received an extra dose of hardening action, and will usually ink up well.

Inking up of the transfer by means of the Bromoil brush is favored by some workers. It is useful at times for the purpose of bringing out portions of a print which may lack detail. In order to use a Bromoil brush some retransfer ink must be mixed with a mere trace of boiled linseed oil and the tip of the brush charged with this, no xylol being used. The charged brush is dabbed upon the required parts of the print until sufficient ink has been taken up, and the inevitable dirtiness of the whites removed with wet cottonwool. The print can be persuaded to take up more and more ink by adding a greater proportion of boiled oil. As a rule, however, attempts at faking of prints are not to be recommended.

General Considerations

Almost any grade of bromide paper can be used for bromoil transfers. The most suitable is a

matt smooth paper, which is coated on a substantial base. It is well to be sure that the emulsion has a fine grain. Glossy paper gives bright-looking prints, which, however, the lithographer finds difficulty in transferring to stone or plate, owing to the extremely high relief.

Transfers may be re-inked and reused a number of times, the limit being governed by the tough-

ness of the paper base.

Some grades of paper have a tendency for the gelatin coating to strip off during inking. This tendency may be minimized by using the bleacher given above. Lack of strength hitherto has been, apparently, due to the softening of the baryta base on which the emulsion has been coated. By substituting ammonium chloride for the more usual sodium salt this defect is overcome. The object of hydrochloric acid in this formula is to enable ordinary tap water to be used. The acid neutralizes any hardness in the water. Sodium bichromate was found to be the most reliable chromic salt to use.

Stretching of Transfers

Sometimes it is important that the impression must be of exact size. In such cases the bromoil transfer process hitherto has been hardly feasible, owing to the tendency for the paper base to stretch unevenly. A bromide paper, known as Kerotype, has recently been placed on the market which to a large extent overcomes this defect. It is a stripping paper—i. e., the prints are first made on a bromide emulsion which has been coated on an impermeable base. These prints are then soaked in a mixture of spirit and water, and the emulsion is transferred by means of a gelatin solution to a suitable support, such as celluloid.—B. J.

Formula for Opaque

Yellow dextrin . . 8 oz. (avoir.) Water 20 fl. oz.

MIX these ingredients in the inner vessel of an oatmeal kettle. Bring the water to boilingpoint in the outer vessel; stir well until the dextrin forms a thick syrup. Add 3 drams of formaldehyde; stir well, allow to become cold.

Take of the syrup 6 fluidounces. Add thereto 8 ounces of "crocus martis," namely oxide of iron (that has been mixed with the smallest possible quantity of hot water so as to form a paste). Mix well with the dextrin. Strain through fine wire gauze, when the opaque will be ready for use. If a very dark chocolate colored opaque is required add a tablespoonful of lampblack to oxide of iron when mixing. Straining is accomplished by rubbing the color through with a stiff brush.

Some Useful Suggestions for Dark Room Fittings

Among the many suggestions made by Mr. Vivian Jobling at the Royal Photographic Society's last technical meeting were the following:

The dark room bench should be not less than 3 ft. 3 in. high, and either treated with paraffin wax or covered with linoleum to protect it from chemicals. A dark-room lamp should be raised on a shelf or box about 8 in. above the level of the bench; a watch-holder fixed to the edge of the lamp shelf is handy.

A convenient strength in which to keep hypo in solution is 50 per cent., as it can then be diluted as required, the bulk being doubled for plates for

example.

To avoid the necessity of weighing out the hypo, a 40 oz. bottle may be taken, exactly 40 oz. of water put into it, and a file mark or scratch made at the water level. Then exactly $10\frac{1}{2}$ oz. of water is poured back into the measure and another scratch put at the new level. To make up the 50 per cent. solution at any time, it is only necessary to fill the bottle with water up to the level mark, and then to add hypo from the stock jar until the water level is raised to the higher mark. The $10\frac{1}{2}$ oz. represents the bulk of water displaced by 20 oz. weight of hypo.

A simple draining rack is made by taking a piece of round stick, planing a flat one one side to prevent rolling, and making a series of sawcuts on the other side, about ½ in apart. The plates are rested in these cuts, on alternate sides of the stick, in order to give greater air space, their lower corners resting on the table or shelf.

For accurately focussing an enlarger, for testing the covering power of the lens, or for setting a fixed focus enlarger, there is nothing to equal a piece of lace net bound up between two pieces of glass. The inclusion of a piece of tissue paper exactly one inch wide, when making such a focussing device, will enable the scale of enlargement to be measured directly on the paper or screen.

To facilitate the centering of prints upon large mounts, an ordinary two-foot rule can be taken, upon which the figures have been painted out, and a new series inserted, commencing with zero in the center of the rule, and marking each halfinch on either side as an inch in ascending order to 24 in. This rule can be centered on a print, and the mount marked off to a definite width on either side; or the rule can be centered on the mount and the print immediately placed centrally on the rule also.

New Autotype Carbon Tissue

THE Autotype carbon is furnished in over forty different colors of tissue and transfer, making possible a very wide range of combinations suitable for any subject. The fact that carbon prints are inexpensive to make and absolutely permanent should appeal to everyone.

Instructions

The tissue furnished, either in bands or packages of a dozen sheets 5×7 or 8×10 , is unsensitized. The first step is to sensitize the tissue. This is most easily accomplished by using the special Spirit Sensitizer. This is very easily applied, and the tissue can be printed within a few hours after sensitizing. Follow the instructions on each bottle of sensitizer.

There are two methods of transfer, single and double. With the single transfer process the image is reversed from right to left, and where this is a matter of no moment the single transfer process is generally used.

Single Transfer Process

The negative to be printed is first bound around the edge with a strip of black gummed paper, or a mask is used over the negative so as to insure a "safe" edge, thereby preventing the edge of the tissue from being exposed to light while printing. The printing process is the same as making ordinary P. O. P. prints. As the image does not appear on the tissue, it is necessary to determine the length of exposure either by the use of an actinometer or by selecting a negative of similar density and making a P. O. P. print at the same time the tissue is exposed. Expose until the P. O. P. print is fully printed When printed remove the tissue from the frame in a subdued yellow light and place in tray of cold water; next take the sheet of single transfer paper selected and place in the same bath. As soon as the tissue becomes limp bring the pigment surface in contact with the coated surface of the transfer paper, lift out together, place on the squeegee board, and by means of rubber squeegee remove all air-bells; then put under pressure for about twenty minutes.

To Develop

Place the adherent pieces in warm water (temperature 105° to 110° F.) of the developing tank; as soon as the warm water has softened the gelatin, which is known by its beginning to ooze out from the edges of the picture, skin off the paper upon which the pigmented gelatin was spread and throw it away; then wash away the soluble gelatin in which the picture is buried by splashing the warm water upon it with the hand; in a few seconds it will begin to appear, and in a very brief space will be fully developed. The development is stopped by placing it in cold water.

To thoroughly discharge the sensitizing salt and to confer insolubility upon the finished print, the print is taken from the cold water and placed in a dish containing a 5 per cent. solution of alum for ten minutes; a final rinse in cold water completes it, and it may be hung up to dry a finished picture.

The Double Transfer Process

For negatives made in the ordinary manner, an additional operation becomes necessary, for if the printed tissues were laid down at once on its final support, as in the single transfer process, the picture would be inverted—i. e., objects on the left hand, for instance, would appear in the picture to be on the right, and vice versa.

To remedy this, the exposed tissue is laid down on the temporary support and then transferred to the final support. The general instructions given for the single transfer are the same, except that overprinting should be avoided.

After placing the print in a cold-water tray a sheet of temporary support should be placed

in the same tray and allowed to remain until it becomes perfectly flat before the tissue is squeegeed to it. The print is then developed, rinsed in cold water, put in the alum, then rinsed in cold water again, then dried as in the single

transfer process.

The double transfer paper for final support is soaked in cold water for about an hour, and then put in the water at about 90° F. for two minutes. Be careful all air-bells are removed. The dried print on its temporary support is then placed in cold water until limp, taken out and placed face support is then placed on back and lightly squeegeed into contact. The adhering papers are then hung up and allowed to dry. When perfectly dry the temporary support is easily removed by pulling apart. It can be rewaxed and used over and over again.

A-The coated surface of exposed carbon

tissue (pigmented gelatin).

B—Single transfer paper.

C—Soak A and B in cold water 60° to 65°. bring coated surfaces together in contact and

squeegee.
D-Place the adherent tissue and transfer paper between blotting boards for fifteen minutes. Next immerse in warm water 100°, until the colored gelatin begins to ooze out at the edges.

E-Strip off the tissue backing paper and throw it away.

F-A dark mass of colored gelatin is left on the transfer paper. This remains in the warm water and the gelatin surface is splashed over until the picture gradually makes its appearance.
G and H—Continue until completed.

I-The picture is now placed in an alum bath (5 per cent.) to harden the film and discharge the bichromate sensitizing salt. A rinse in cold water completes the operation.

Reproducing Valuable Negatives

NEARLY every studio has in its files negatives that can be counted upon to supply a certain amount of revenue in duplicate orders. And in some cases the value of such negatives is very hard to estimate.

You may have made the favorite portrait of your Senator and he may eventually become the Governor of your State. He may insist on the use of his favorite portrait for publicity purposes, and you will receive a considerable income from

this one negative for several years.

But one day the printer gets careless and something happens-you may never know just what -but that particular negative is broken. You can copy a print, but the quality of the original

is lost.

We know of a concern that handled valuable negatives as carefully as they could be handled, and still they got broken. The printer believed it was a "jinx" that their value put on them but, however that may be, the boss found that you couldn't "jinx" a film negative. So all of the valuable negatives on glass have been reproduced on film. Everyone about the place breathes more freely now, and when the printer

looks as though he might be on the verge of a collapse, the boss doesn't ask him which negative he has broken but just naturally tells him to go

home and get a doctor.

If you have valuable negatives on glass it is a very simple matter to reproduce them. Make a film positive of good quality and file it away in a safe place. We say a safe place because there might be a fire in the block in which your studio is located and your negatives ruined by fire or water, but you could not get insurance to cover the value that is in them. Store your original negatives in the studio and store the positives you make from them at home. They are film and will take up no appreciable amount of space.
If your negative is of normal contrast, make

the positive on Commercial Film. Do not conflict this with commercial ortho, which is much Commercial film has about the same speed as a Seed 23 plate and is especially suited

for making positives.

If, however, the negative is flat and could be bettered by giving it slightly more contrast, make the positive on process film, while if it is too contrasty, it can be improved by making the positive on portrait or commercial ortho film.

If you are not accustomed to making positives, or if you are accustomed to making lantern sldes, it is well to know that lantern slide quality is not the positive quality necessary for producing negatives. The lantern slide or the transparency that is made to hang in a window must have fairly opaque shadows and transparent highlights to have brilliancy, but such quality will not reproduce a negative properly.

For this purpose the positive must have detail and gradation-not the quality that makes it beautiful to look at but the quality that makes

it print well.

To secure this, exposure must be full and development must be carried to the point where detail is secured in the high-lights and there is good printing density. This is absolutely necessary if the positive is to hold up and reproduce the negative in its correct balance and original quality

Positives are usually made by contact in a printing frame, care being used to see that perfect contact is secured. Exposures are most satisfactory when made at about 12 or 15 feet from a 16 c. p. electric lamp. For the average normal negative the exposure will be approxi-

mately from six to twelve seconds.

The regular formula recommended for the film should be used in developing both positive and negative. It will be found most simple to do any retouching, etching or spotting on the negative. When placed in a retouching frame the result of the work can be seen exactly as it will appear in a finished print. A scratch or a hole that would be difficult to spot in the negative appears as a black spot in the positive and is quickly etched away.

If you have not used film for negative making, use film as insurance against negative breaking. Then when you have seen film advantages in this particular line of work, a trial will convince you of the superior quality of film results in all

your negative making.

Removing and Transferring Gelatin Films from Cracked Negatives

In the regular work of a photographic printing establishment, where a large number of negatives are in daily use and being handled by different people, although great care may be exercised, accidents will occur and a valuable negative is liable to get broken or cracked. If the crack is in the glass only, and the film is not affected, the usual plan is to place a piece of albumen paper over the front of the negative, covering this with a piece of clean glass of the same size, the whole being held in position by binding the edges with strips of gummed paper; or, if albumen paper is not at hand, a piece of aristo-platino paper from which the sensitive coating has been removed, by placing the paper in a clean solution of hypo, indication 20 by the hydrometer, allowing the paper to soak for ten minutes, then washing well in running water for a short time, blotted off, and as soon as dry can be used in place of the albumen paper. Although this answers quite as

well the printing process is greatly retarded.

Any good reliable method by which the film itself could be removed and transferred to another piece of glass would prove to be of con-

siderable value to the photographer.

Before attempting the removal of the film from a valuable negative a few trials should be made with discards to enable one to become

familiar with the operation.

In the first place it will be necessary to harden the film by soaking the negative in a strong solution of chrome alum, 1 ounce of alum to 10 or 12 ounces of water, and filtering. If the negative has been retouched, which most likely would be the case with a portrait, the retouching medium must be removed either with turpentine or benzine and the surface wiped quite clean with a tuft of absorbent cotton. The negative must now be placed in the alum solution for twenty minutes. It must then be removed and washed for fifteen minutes and allowed to become quite dry. The following solutions must be made up in separate bottles:

Nο	1
INO.	

Commercial	Яu	orio	ie c	of s	odiı	ım	
Cold water							12 oz.

No. 2

Citric acid	(pov	vde	red)		3 oz.
Cold water					12 oz.

These will keep in good condition for some time.

To remove the film, take equal parts of No. 1 and No. 2 by measure; place the mixture in a hard-rubber tray. If the negative is 5×7 , 4 ounces of No. 1 and the same quantity of No. 2 placed in a $6\frac{1}{2} \times 8\frac{1}{2}$ tray will answer the purpose. Have at hand a clean glass plate 8×10 , wet it under the faucet, pour upon the surface a small pool of gum arabic solution—1 ounce of gum arabic dissolved in 5 ounces of water. Allow the gum to flow over the surface of the plate, then wash it in a gentle stream of water; only a very small trace of gum is needed to cause the perfect

adhesion of the film. Lay this plate in a level

Now place the negative to be stripped into the fluoride mixture; rock the tray occasionally. It will be found in the course of a minute or so that the film will show signs of lifting at the edge. Now lift the film from the cracked plate with the forefinger and thumb of each hand; then lay it down upon the gum-wetted plate; adjust the film with a small camel's hair brush and see that it lies perfectly square; then take a piece of paper, wet it under the faucet, drain it slightly, and lay it down upon the film, holding one end with the left hand; apply a very soft india-rubber squeegee over the paper—do not press too heavily; repeat the operation in the reverse direction. Turn the plate over to ascertain whether there are any air-bubbles; if there are, a careful application of the squeegee will readily remove them; if there are none, the plate may be laid aside in a horizontal position to dry. It will be found that if the film has been carefully hardened that the total expansion will not exceed one-eighth of an inch.

As soon as the film has become thoroughly dry it should be varnished with a good quality of negative varnish, or it may be coated with amyl-acetate collodion. The reason for coating the film with varnish is to cause it to become firmly attached to the glass plate at the edges, because where the film had been hardened there is a tendency to lift at the edges, which at times will give trouble in securing complete contact. The mixed solutions must be thrown away after use because the stripping qualities are lost.

The real action which takes place to cause the lifting of the film is due to the liberation of fluoride. This element in contact with water produces hydrofluoric acid, which, in turn, very slightly attacks the surface of the glass through the pores of the gelatin film, thus releasing the hold of the film upon the glass, while citrate of sodium is formed and remains in the water.

The hardening of the film previous to the stripping is of the utmost importance. If this precaution is not taken the gelatin film will become enlarged to a considerable extent by the absorbtion of water; in fact, it is not a difficult matter to enlarge a film from a 4 x 5 negative to 5 x 6; should the negative happen to be a dense one the enlargement presents a decided improvement. The object in using a larger glass plate to place the stripped film on is to give the operator more freedom to adjust, while as soon as the whole operation is complete the plate can be cut to the required size. If a considerable number of prints should be required in carbon the above method of stripping and reversing the film, so as to produce a reversed negative for single transfer, will at once recommend itself.

The carbon process appears to be coming very much to the front, and is likely to become more widely adopted, because the price of platinum and platinum salts is on the increase. The rise in price is likely to continue because the yearly production of platinum is very limited, while the demand for it is constantly on the increase not only in photography, but for commercial purposes. Should the price of platinum continue to rise, it may became too costly to use in pho-

tography, the carbon process would then become the only one that could be thoroughly depended upon for permanency and the demand for reversed negatives would be considerable in such a case. The process described will prove invaluable for the making of reversed negatives.

Many times the photographer requires a considerable number of clean glass plates for use in the printing frames, ranging from 5 x 7 to 11 x 14, and the tedious work of cleaning off old negatives by using a mixture of potash lye or soda with hot water is resorted to. There is no better plan to be found for this kind of work than the one described using, of course, the liquid in greater bulk. The writer has worked continuously for several hours without any apparent injury to the hands beyond causing the skin to turn yellow. After the work of stripping was completed the hands were washed in lime water, the object being to convert any trace of weak hydrofluoric acid into fluoride of lime and thus neutralize any deleterious effect the acid might possess. The use of india-rubber gloves might be used in this instance with advantage if a large number of plates have to be cleaned. When plates are cleaned by this plan, as soon as the film has been removed, the plate is placed into a large tray of clean water until it is filled, the plates are then wiped with a piece of clean rag in a stream of running water and placed into a rack to dry. Sometimes a few of the plates will present a bluish tint upon the surface, but this will not interfere with the use of the plate as a negative support. The only plates that may have to be discarded will be those that possess what appears to be a permanent sulphide stain, which usually occurs with those plates that have been allowed to stand and the hyposulphite of soda has crystallized upon them. hard gelatin substratum has been used it will not matter, both substratum and film can be removed, the plate being left quite clean.

Oil Painting Photographs

You can do it. Here are the directions. Practice makes perfect. That is all you need to do.

The materials needed are several tubes of oil paint, no special make or paint required—any good oil tube artists' colors—also one tube of megilp. A number of colors, when rubbed on a print, will be quite transparent. Some are not. Among those which will work well are Prussian blue, Vandyke brown, rose madder and alizarian green (Windsor & Newton's). Some absorbent cotton and a few spotting brushes will also be required, also some sharp pointed sticks of wood (toothpicks answer very nicely).

On all hard, smooth surfaces no preparation of the print to receive color is necessary, but on soft surfaces and rough papers a light coating of megilp rubbed over the surface with a tuft of cotton and allowed to dry will put the print in condition to hold the paint on the surface.

Squeeze a small quantity of paint out on a piece of clear glass. Thin if necessary with spirits of turpentine. You can place a piece of white paper under the glass, then you ca see what

you are getting when mixing your colors. Take a small piece of cotton made into a wad, dip into the paint and rub on paint, rubbing down thin with clean pieces of cotton to depth desired. Should you run over in places you can generally clean up the edges with clean cotton, rubbing a little harder. A little cotton twisted about the end of a toothpick will allow you to get at the small parts to either clean up or color. After you have gone over the face with color, the eyes and lips should be cleaned up and the color put in with a small spotting brush. For the strong high-lights a tuft of cotton on a stick rubbed on will reduce the color and brighten up your lights. When you have white ruching, pearls or any strong white lights, use clear white paint put on with a spotting brush. Work up the backgrounds by simply rubbing in color, not getting it on too heavy.

Should you have any difficulty in getting paint off the print which you run over in places, a tuft of cotton dampened with turpentine will remove it.

Flesh and Hair. Rose madder and little yellow ochre make flesh.

Rose madder clear for tints on cheeks and lips. Yellow ochre, weak wash, for all light hair. Burnt sienna, weak wash, for all red hair.

Burnt umber and lampblack, weak wash, for dark hair.

Burnt sienna and Indian yellow, weak wash, for light brown hair.

Weak wash of blue for all gray hair.

Should flesh tints be too strong go over with weak wash of yellow ochre.

Draperies. Crimson lake and white make rose. Crimson lake and indian yellow make salmon pink.

Indian yellow and Prussian blue make sea reen.

Chrome green No. 3 and white make pea green.
Chrome green and blue make dark green.

Chrome green, lampblack and burnt umber make bronze green.

Lampblack and Prussian blue make navy blue. Indian yellow and crimson lake make gold. Crimson lake and cobalt blue make purple.

Crimson lake and lampblack make wine. Yellow ochre, flake white and red make deep buff.

Blue and red make plum. Lampblack, burnt sienna and cobalt blue

make deep black.

Cobalt blue for all light blue.

Note. Platinum prints must be treated with a coat of Windsor & Newton megilp and allowed to dry for three hours or more before painting.

Rose madder. Crimson lake. Yellow ochre. Flake white. Lampblack Prussian blue. Cobalt blue.

Burnt sienna.

Burnt umber. Chrome green. Indian yellow. Paynes gray. Megilp. Turpentine. Sap green.

To mix use: Turpentine, 8 parts; poppy oil, 1

Note. For matte or rough paper use megilp or turpentine and poppy oil or boiled oil; for semi-matte or glossy, turpentine or boiled oil.

Cut-flower Photography

I HAVE recently had quite a lot of cut flowers to photograph for the illustration of a book, and possibly a few hints as to the method of working that I found successful may not be

unwelcome.

Dealing first with the plates. As one will in all probability have to deal with all colors, colorsensitive plates must be used and for the majority of subjects the ortho- or isochromatic plate will fill the bill, but not without a light yellow screen or ray-filter. I have a set of the Wratten K1, K2 and K3 and have found the K2 the most useful. The one important point about the filter is that it shall be a pure yellow, the slightest trace of orange just makes the foliage too dark, for it tends to cut down the blue-greens. For the same reason the exposure must be full, for nearly all the iso plates on the market are but slightly sensitive to this particular color. Some of the spring foliage, especially that of tulips hyacinths, etc., is quite a light yellowish green color and should be rendered light in the print.

It will be found that, except in the case of

It will be found that, except in the case of some very deep red flowers, the iso plate will be quite satisfactory, for the petals reflect so much white light that they photograph lighter than one would expect. Of course, panchromatic plates may be used with excellent results in all cases. One point ought to be mentioned and that is that color-sensitive plates give a much better rendering of white flowers than ordinary plates, for the delicate shades on white petals

are really never quite white.

As regards the backgrounds a great deal will naturally depend on the artistic taste of the operator, but as a practical guide it may be stated that, as a rule, light flowers look better on a dark ground and dark flowers on a light ground. I purchased some sheets of stout art papers, 28 x 22 inches, in various shades, ranging from black to white, through greens and grays. Some light wood frames were made of half inch by one inch soft pine and the papers were soaked in water until limp and then blotted off and glued to the wood frames with hot glue and left to dry, which they did as tight as a drum head. In all cases the backgrounds were photographed and a print made so as to form a record of their photographic qualities, for one cannot always tell from the color exactly how they will look in a negative. In all cases too the backgrounds were placed sufficiently back from the flowers so that the shadown of the latter did not fall on the ground.

In most cases single flowers were wanted and I used old wide-mouthed chemical bottles filled with water and a good size pad of wet absorbent cotton was wrapped round the stems and the whole put into the mouth of the bottle. The cotton when wetted enables one to alter the pose of the flower without any difficulty. Now and again a leaf had to be coaxed into place, and sewing thread as near as possible the

tint of the ground was used.

For some of the roses, and it was chiefly roses I had to take, drops of water were placed on the petals to simulate dew, but this was not always successful until I discovered that a mix-

ture of equal parts of glycerin and water, applied

from a dropping tube, did the trick.

In all cases the image was carefully examined on the ground-glass as to composition, and when necessary obtrusive leaves were trimmed off with a pair of sharp shears. I spent a lot of time over the job, but it paid in the end as I have now a big order from a nurseryman to take a whole series of 8 x 10 negatives in his greenhouses.

As much care in lighting the subjects is required as in portraiture, but in the main I found that a rather full, flat lighting the most

satisfactory.

For development pyro-soda diluted with an equal quantity of water was used and a normal time of five minutes at 65° F. adopted and the resultant negatives were found to be all that one could desire—soft, full of detail and giving good color rendering.

Spring Cleaning a Camera

In the springtime a photographer's fancy lightly turns to thoughts of the spring cleaning of his camera. The beginner who knows that his handiwork is somewhat clumsy would be well advised to leave his cleaning to some reputable firm of camera repairers; but if he must do it himself, it is well to advise the would-be cleaner not to tackle too much and not to tinker with delicate mechanisms, such as shutters and rack-and-pinion movements. The parts of a camera which most require cleaning are lens, dark slides or sheaths, bellows, or in the case of a box camera, the inside, and possibly, but very carefully, the shutter.

If possible, the lens should be removed from the camera and the components screwed from the mount. A careful note should be made in some cases as to the position, back or front, of the components, and, where the lens is a single combination, as to which way round the lens fits in the mount. We remember some years ago having a camera which had been cleaned being brought to us for examination. All the photographs which had been taken after the cleaning were badly blurred round the edges. This was entirely due to a reversal of the lens in the mount, and a re-reversal put things right. The lens mount should be carefully wiped free from dust with a clean handkerchief moistened very slightly with glycerin or water. A writer recently advised cleaning the lens itself with dilute caustic soda or potash, but unless the lens is very badly soiled this had better be left alone. A polish with a clean cloth moistened with methylated spirit, followed by a dry rub, is all that is necessary. In the case of a high-priced anastigmat a dust with a camels'-hair brush is all that should be attempted.

Cleaning Dark Slides and Sheaths. Unless great care has been taken, metal slides will have rusted or the enamel will have been badly chipped. In an extremely bad case the rust had better be scraped off and the slide polished with fine emery. All dust should then be wiped away, and the slides blacked with either Bate's dead black or a black varnish of the following

formula:

Celluloid (old film cut up) . . 15 gr. Amyl acetate 1 oz.

Add lampblack until color density is correct,

and mix well.

Wooden slides generally require coating inside with dead black, and the hinged part of the draw slide should be made light tight with fabric; tracing cloth, painted with the same black and attached by means of seccotine or fish glue, is

all that is necessary.

For stiff sliding (i. e., that should be sliding) parts, warm, dry air and patience are the only advisable course. It may take several days thus to get the parts to run smoothly. On no account apply any kind of moisture; but when the wood has been very thoroughly dried one may then use a little dry black lead or powdered French chalk. For stiff metal joints, apply a drop or two of paraffin, and leave in a warm place. This evilsmelling liquid has a most remarkable power of penetrating metal joints. After the paraffin has freed the joints the metal should be rubbed clean and then a trace of watchmaker's or typewriter's oil applied. The less the better, as any excess cathes dust and tends to close

excess cathes dust and tends to clog.

Cleaning the Bellows. The bellows of a folding camera are subject to many diseases, chief of which are pinholes, mildew and bagginess. They should be well scrubbed inside and out with a dry, stiff tooth-brush, and any fairly large holes patched with black court plaster. A small quantity of shellac dissolved in methylated spirit to make a stiff solution (this takes some days to dissolve) is painted over the inside, and the bellows allowed to dry in a position as nearly closed as can be, without allowing the folds to stick together. A coat of dead black finishes the treatment for the inside. The bellows will now be stiff and light-tight; the outside can be cleaned by rubbing with glycerin or by the application of a small amount of black boot polish. The inside and outside of a box camera may be treated with dead black and glycerin or polish respectively. Any corners of the instrument from which the leather covering has parted should be mended with seccotine before treatment.

Cleaning the Shutter. The best advice that can be given is to let well alone. Shutters require periodical examination by an expert; springs should be renewed or the speeds indicated will be false, and in the case of focal-plane shutters, the blinds will have deteriorated and will be full of pinholes. A coat of rubber solution thinned with benzol and mixed with lampblack can be carefully applied to make the blind light-tight, but on no account should the blind be allowed to roll up until it is dry. The shutter should be well warmed first to make the rubber material

more flexible.

Don't tamper with the lens diaphragm.

Don't take the shutter to pieces.

Don't lacquer brasswork unless you are an expert.

Don't try to recement your lens.

lf in doubt—Don't.

We remember a humorous writer advising his readers to scrub the lens with pumice, to tar the bellows and to take the shutter to little-little bits. Excellent advice to the novice who loves

to damage his beloved instrument, and our only fear is that some "uncareful" camera owner will make a mess of his camera and murmur unkind thoughts about us. Reasonable care, lack of hurry, and the thought that a camera differs greatly from a soap box, will give a satisfactory result to the amateur who follows the passion of his household at this time of the year—spring cleaning.—Amaleur Photographer.

How to Mix Fixing Solutions

FIXING baths may be divided into the following classes:

1. Plain hypo solutions.

2. Acid hypo solutions consisting of hypo with the addition of sodium bisulphite, potassium metabisulphite, or sodium sulphite with acid.

3. Acid hardening hypo solutions.

No difficulty is usually experienced when mixing a plain hypo solution. When mixing a quantity of solution in a tank stretch a filter bag made of cloth over the tank, place the chemicals in the bag and allow warm or hot water to flow into it. The temperature drops considerably while the hypo is dissolving and this and the water added after all the hypo is dissolved will cool it very quickly. If a scum forms on the surface of the solution on standing this should be removed by drawing the edge of a towel across the surface.

A plain fixing bath, however, is seldom used because it gradually becomes alkaline from an accumulation of alkali carried over by prints and plates from the developer and this tends to soften the gelatin, while the image continues to develop in the fixing bath, so that if two prints stick together, more development takes place at the point of contact, causing uneven development. If the bath is acid, the acid kills or neutralizes the alkali in the developer carried over, thus pre-

venting unevenness.

In order to be able to mix an acid fixing bath intelligently it is necessary to understand a little about the chemistry of the acid fixing bath.

Hypo can be made by boiling together sodium sulphite and powdered sulphur until no more sulphur is dissolved. If acid is added to a hypo solution sulphur is liberated, forming a milky solution known as milk of sulphur. If sodium sulphite is present however, any sulphur which tends to come out of solution combines with the sulphite to form more hypo and the solution therefore remains clear. It is necessary for the sodium sulphite to be in the solution at the time the sulphur is liberated.

Sulphur cannot be redissolved by adding sodium sulphite to the milky solution except by boiling, while on standing it is apt to settle on the prints or plates as a scum. All acid fixing baths, therefore, contain either sodium bisulphite, potassium metabisulphite, or a mixture of sodium sulphite and some acid, and the following directions for mixing should be

followed:

Do not add the bisulphite or acid sulphite solutions to warm hypo solution. The solutions should be perfectly cold when mixed or the hypo will turn milky.

Of the common acids, sulphuric, hydrochloric, acetic, citric, etc., acetic has the least tendency to produce milkiness for a given degree of acidity.

On keeping, an acid hypo solution gradually becomes milky, so that fresh solutions should be made often and not overworked.

Acid hardening baths are prepared by adding to hypo an acid hardening solution which contains the following ingredients:

An acid such as acetic, which stops develop-

A hardening agent, such as alum or chrome alum.

A preservative, such as sodium sulphite or sodium bisulphite.

The latter acts as a preservative in two ways: It prevents the formation of sulphur by the action of the acid on the hypo, while it also prevents the developer carried over into the fixing bath from oxidizing and turning brown.

How to Mix the Acid Hardener. Prepare the acid hardening solution as a separate stock solution and add this to the hypo solution as

required.

The order of mixing is important. The best method is to dissolve the alum and sulphite in separate warm solutions, cool, add the acid to the sulphite and then add the alum solution.

If the order of mixing is reversed and the alum first added to the sulphite, a white sludge of aluminum sulphite is formed which dissolves with difficulty when the acid is added. fore, if after mixing, the hardener is milky and a sludge settles out, this is due to a relative insufficiency of acid, that is, the acid used was either not up to strength, or too much alum or sulphite was added.

With all other hardening baths the order of

mixing is the same.—Photo Digest.

Photographing Farm Animals

PHOTOGRAPHY plays an important part in modern salesmanship and millions of dollars' worth of goods are sold annually entirely on the appeal of the photographic print. Nothing else tells the story so completely and so briefly as the photograph. Its truthfulness has gained for it implicit confidence. Costly jewelry, china, furniture and complicated machinery will sell as readily from the photograph as from the sample. Farm animals make splendid subjects for the camera, and a good photograph of a "thoroughbred" will display all its good points very much better than any amount of written or verbal description.

Few branches of photography offer more pleasure than the photographing of animals, and the pictures obtained are not only very pleasing in themselves but are invaluable as a help in dis-

posing of stock.

While there are no unsurmountable difficulties in the way of securing good results in the photographing of animals, it is work that calls for much patience and some practical knowledge of animals and as these are attributes of farm life, the photographic manipulation will perhaps bear some explanation.

The first question is: What is the most

suitable camera for the purpose? The most satisfactory camera for this class of work is a camera of the Graflex type, which shows the subject on the ground-glass right side up the full size that it will appear in the finished print. A moving animal can be followed up and the focussing done without getting under a focussing cloth and without having to estimate or guess the distance between the subject and the camera. All you have to do is to get your animal nicely placed on the ground-glass, turn a milled head to get a good sharp image, and release the shutter. You will get in the print just what was seen on the ground glass.

The first requisite in a picture that is made for record or sale purposes is truthfulness, and to get this care must be taken to avoid any distortion. With an animal close up to the camera, twenty-five feet or less, the back of the camera must be parallel to the subject. If the lens is pointed to either the fore or hind quarters of an animal, a distorted picture will be the result. In photographing a fine dairy cow the temptation is to emphasize the dairy end of the animal, and with a beef bull the tendency is to overdo the neck and shoulders. Distortion, even very slight, will defeat the object for which the photograph was made.

Second in importance, is perhaps the suitability of the background. In photographing an animal, we are apt to concentrate our attention on it and fail to take in all the surrounding objects, but the lens is more impartial and sees the object and its surroundings with equal clearness, with the result that the background in our print will stand out much more vividly than it seemed to in the original.

The best background is the sky or a distant landscape. Then in the picture this is so indefinite that the attention is concentrated on the subject. Never photograph an animal in front of a barn or other building or in front of a fence. Straight lines do not harmonize with the lines of an animal and there must be no competition with

the subject.

It must be remembered that the camera takes in all details, and animals that are to be phtographed especially for points and "type" should be well-groomed and free from any manure stains. Particularly does this apply to the Holstein breed, where very little stain would spoil an otherwise perfect picture. Close-cropped an otherwise perfect picture. Close-cropped grass makes the best place on which to pose animals, as it does not detract attention from

the feet and legs.

In getting your subject on the ground-glass or finder do not get it too near the edge—get it fairly well centered with space at either end. Animals that are held under control by a line or pole should have the tension removed and be allowed to relax and assume a natural position before the shutter is released. If there is a helper holding the animal, see that as little of him as possible is included in the picture. included can be painted out on the negative and the finished print will show the animal free from

Long-haired dogs and sheep cannot be photographed satisfactorily if there is much wind blowing. This also applies to fowls with heavy

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plumage which ruffles easily and would spoil the picture.

Sheep and hogs are more difficult. time and patience are needed to get good results. They have to be approached more closely, and being very quick and active, many chance exposures have to be made. They are best approached when feeding, and then when focussed a noise will attract their attention and the exposure should then be made.

The best time to make photographs of animals is from 8 A.M. to 5 P.M. in the summer months, and from 9 to 3 in the winter. Whether the photographs are made in the morning or afternoon would depend upon the location of desirable backgrounds. The sun should shine on the subject and not on the camera or lens. Cloudy days are perhaps more suitable than clear, bright, sunny days when the sun sill cast heavy shadows.

The question of exposure will simplify itself

with a little experience.

Carry a few extra plates or films and make an exposure at every opportunity and always be ready for the next one.—Photo Digest.

Bromoil: The Ideal Process for the Individual Worker. Its Possibilities for the **Professional**

Now that the war has ceased to be the allabsorbing topic and concern of humanity, many of the minor attractions of life that obtained in days of peace are gaining the ascendant once more. In photography this is particularly the case: and where, during the past four years, photographers have been content with straightforward productions with the camera and such modifications as were well-known and current five or six years ago; very little in the way of continued experiment or new investigation in processes has been accomplished or even attempted during the period of hostilities.

There are several excellent and attractive printing processes, however, eminently suitable for the pictorial worker, that appear to have reached a stage short of perfection prior to the war, and it is only now that renewed interest in them is occurring. We would particularize the bromoil process in this connection. Bromoil is one of the most elusive and, under certain conditions, one of the most satisfying of modern processes for pictorial workers; allowing as it does such enormous control in the final result, provided the bromoil brush is in the right hands. At the same time, the variety if contingencies that can arise to defeat even the expert worker in the production of a good print appears to be endless. This is probably due to the fact that the process has never been thoroughly investigated from the scientific point of view, but only by the pictorial worker. Most of the formulæ hitherto published in connection with bromoil appear to have been evolved by the "hit or miss" principle, not at all to the liking of the scientific mind; and it is to be hoped that opportunities will now occur for more definite experiment and investigations in the process.

Bromoil for the Professional

There is one development in particular that has not been exploited or, at all events, only in a very minor degree, and that is the utilization of the process by professional photographers. The tendency nowadays is for a certain class of professional worker to specialize in more individual and personal work than the older style professional, who is content to turn out machine-made portraits-very excellent, no doubt, but still lacking the personal touch. The few workers in London who have essayed the strictly personal and individual form of portrait photography have "made good," and are able to command prices for single copies that would make the mouths of the rank and file of the profession water.

The bromoil process is or should be ideal for this type of professional. He can take his time over the work, and can produce a result essentially as individual in character as that produced by a portrait painter, and equally as permanent so far as the result in pigment is concerned. Moreover, because of the possibilities of enlarging he can make the pictures of any size in the most simple and direct manner. The suggestion is one worth every consideration by the practical-minded artist in photography. Should the demand become great there is no reason why a well-trained assistant should not perform the preliminary inking-up of the portrait, leaving the actual finishing and final touches to the hands of the master. It is also a fact, and every bro-moil worker will bear out the statement, that continual production of bromoils under definitely repeated conditions and with the same materials will give a greater proportion of good results than are obtained when a variety of paper is tried and different formulæ experimented with.

Bleachers

There is still much to be said for the original bromoil bleacher advocated soon after the process was first suggested. This bleacher necessitated the use of a separate acid bath, but it is seldom that it fails with any well-developed bromide print, although the more modern bleachers have been known to do so repeatedly. The formula was:

10 per cent. potassium bi-	
chromate solution	4 drams
10 per cent. potassium bro-	
mide solution	2 drams
10 per cent. potassium ferri-	
cyanide solution	2 drams
10 per cent. citric acid solu-	
tion	2 drams
10 per cent. potash alum	70772-0-477
solution	8 drams
Water up to	10 oz.

The dry print is bleached in this solution. It is then well rinsed to remove the superfluous bleacher, and placed in a 5 per cent. sulphuric acid bath. This is made by adding ½ oz. of pure sulphuric acid to 10 oz. of water. In this bath sulphuric acid to 10 oz. of water. the bleached print should remain until practically all trace of the image has disappeared, and the picture is visible in a slight relief when viewed aslant; although the expert bromoil worker can generally tell by sense of touch whether the surface "feels" right for pigmenting, the highlights being usually slightly slimy to the touch and the shadows rough.

After the bleached print has been in the acid bath, it is rinsed again in four or five changes of clean water, and finally fixed in sodium hyposulphite 1 oz., sodium sulphite crystal ½ oz., with water up to 10 oz. After a couple of minutes in this bath, the print is again washed in three or four changes of water (which should not be below 60° F.), and it is then ready for pigmenting at once, or it may be dried and can be

wetted again when required for finishing.

The alternative bleaching bath, and one which has gained great popularity, as it dispenses with the extra operation of the acid bath, is well worth giving here in view of the number of queries. It is made up as follows:

out it is made up us ione is

10 per cent. copper sul-	
phate solution	6 drams
10 per cent. potassium bi-	
chromate solution	2 drams
10 per cent. potassium bro-	
mide solution	4 drams
Pure hydrochloric acid	2 drops
Water	9 oz.

This bleacher is a beautiful green color, and may be diluted with an equal bulk of water, if necessary, for use. It must be used, however, at a temperature of about 70° F., and after bleaching the print must be washed in warm water of from 70° to 80° F., and fixed in a fixing bath made up as given above; or even an acid fixing bath may be used, but this should also be of the temperature of the last washing water.

With these two bleachers to hand, practically every variety of quality in a bromide print can be dealt with. The ferricyanide bleacher is more adapted to the fully exposed, fully developed print, with strong contrasts. The copper bleacher is more suitable for the less fully developed and somewhat thin or flat bromide print. A few experiments will soon show the adaptability of either bleacher to a specific type of print. A very overdeveloped bromide placed in the ferricyanide bleacher will gradually reduce and bleach out, step by step. In the case of the copper bleacher, however, the tendency is for all the shadows to clog up if they are overdeveloped.

the shadows to clog up if they are overdeveloped.
When rewetting a bleached print for pigmenting, warm water should also be used, and the beginner in the process should not commit the error of being in too much of a hurry to secure a good result in a minimum of time by piling on

pigment at the start.—Photography.



REPLIES TO QUERIES



GEORGE FRANKLIN:

Your inquiry respecting a preparation for printing upon zinc that will wash out without rubbing, may be met by using the following:

Fish glue			4 oz.
Distilled water			10 oz.

Mix this well, then add thereto the following mixture:

Ammonium bichromate		240 gr.
Distilled water		4 oz.
Ammonio citrate of iron		18 gr.
Rock candy		60 gr.
Albumin of four eggs		
Glycerine		1 dr.

Mix these together with an egg-beater, add the fish glue mixture, mix again with the eggbeater; filter the mixture through absorbent cotton, when it will be ready for use.

T. Gamble:

You may make your fabric fireproof by use of the following preparation:

Fireproofing Formula

Warm water	35 fl. oz.
Ammonium phosphate	4 oz. av.
Boracic acid	2 dr.

As soon as the above salts are dissolved place the fabric therein, allow to soak for half an hour, then wring out slightly, dry quickly. Fabric thus treated may be charred but it will not ignite.

thus treated may be charred but it will not ignite.
Paper also treated in the same solution be-

comes fireproof.

Excelsior that is used for packing purposes, although easily ignited under ordinary circumstances, will become *non*-ignitable if treated with the above preparation.

T. JASPER:

Seignette salt is commonly known as Rochelle salt, or sodium potassium tartrate, the chemical formula being Na.K.C₄H₄O₆.4H₂O. Yes, it is used in the preparation of some gelatin emulsions, in combination with other chemicals, for sensitive printing-out papers.

PHOTO-ENGRAVER:

There are a number of formulæ for negative varnishes to be used upon a moderately heated negative. The following has withstood the test of nearly fifty years to our certain knowledge:

This preparation should be stood in a warm place and shaken occasionally until the gums are all dissolved and allowed to settle for two or three days. The clear portion is then decanted ready for use. A collodion negative that had been coated with varnish made according to the above formula in 1874 was cleaned off a short time since, by flooding the surface with grain alcohol, when the perfume of the oil of lavender was very strongly in evidence after a lapse of forty-five years.

G. F.:

Do not add crystals of hypo to an old fixing bath. The muddy effect you mention is proof that the fixing properties of the solution have become exhausted.

Can you tell me where to obtain or how to prepare the tissue for the ozotype process? Simple instructions for working will oblige.—CARBON.

Ozotype is a patented process. Briefly the process is as follows: A sheet of paper is coated thinly with gelatin, which need not be rendered insoluble with chrome alum, though the single transfer paper employed in the ordinary carbon process may be used. This paper is sensitized by brushing over the surface a solution of potassium bichromate 7 parts, manganous sulphate 14 parts, water 100 parts, or with one of the solutions detailed in Mr. Manly's patent specification referred to further on. After the paper is dried it will keep in good condition indefinitely if stored in the dark. The prints are made by exposing behind a negative in the usual way (and as the image is visible no actinometer need be used), and are fixed by repeated applications of cold water. To obtain the carbon image carbon tissue of any desired color is soaked for one minute in a solution of hydroquinone 1 part, glacial acetic acid 3 parts, and water 1000 parts. The paper print being immersed in the same bath, it and the tissue are drawn out with the face sides in contact, and are squeegeed together and hung up to dry. While the drying is taking place the manganese and chromium image renders the gelatin of the carbon tissue in contact with it insoluble, the action being assisted by the acid and hydroquinone solution. When the combined print and tissue are dry they are soaked in cold water for half an hour, transferred to hot water, the backing of the carbon tissue is peeled off, and the carbon image is developed in the same manner as an ordinary carbon print. The advantages claimed for the process are a visible image during printing, non-reversal of the image, and the absence of potassium bichromate in quantities likely to be injurious to the skin, although even in the ordinary carbon process there is no risk of contracting the bichromate skin disease by working the process on a small scale. In the ozotype process there is sometimes a difficulty in stripping off the backing without injury to the pigmented gelatin film, and the image is not so clearly defined as in the ordinary process. Both of these defects will probably be overcome when a carbon tissue specially prepared for the process is placed upon the market. As it is, the softness of outline is considered an advantage by some photographers.

The sensitizing solutions as given in the patent specification are: A, a saturated aqueous solution of potassium bichromate, to which has been added as much boric acid as it will dissolve at a temperature of 16° C. or thereabout. B, manganous sulphate 25 parts to 100 parts of distilled water. C, manganous chloride 25 parts to water 100 parts. D, aluminum sulphate 25 parts, water 100 parts. E, dextrine or gum arabic 1 part, water 2 parts. These solutions are combined in the following proportions: A 10 parts, B 4 parts, C 2 parts, D 1 part, and E 1 part.

A variation of the acid hydroquinone solution is given in the specification, as magnesium sulphate 10 parts, glacial acetic acid 8 parts, hydroquinone 2 parts, ferrous sulphate ½ part, water 1000 parts. These proportions may have to be slightly varied to obtain the best results with negatives and carbon tissue of different characters. An increase in the quantity of acetic acid will give greater contrast, and a larger proportion of hydroquinone tends to produce soft results.

Photographic Materials and Processes

Photographic papers; Bubble formation in. R. E. Liesegang. Kolloid-Zeits., 1918, 23, 200-202.

Photographic papers often exhibit bubbles in the gelatin during development and fixation. These bubbles are sometimes filled with solution and sometimes with air, but in both cases their origin is osmotic. The air comes from the paper where it was originally present and is driven between the paper and gelatin layer by osmotic processes.

Quinocyanins (pinacyanols, dicyanins). O. Fischer. Jour. prakt. Chem., 1918, 98, 204-232.

Considerable light is thrown on the conditions of formation of the blue cyanins used as sensitizers in photography which have been put on the market under the names pinacyanol chloride, dicyanin bromide, and \(^4\)-dicyanin iodide. For the production of pinacyanols and of their homologues. the \(^4\)-dicyanin obtained from 2.4-di- and 2.4.6-trimethylquinoline alkyl iodides, two quinoline molecules are necessary, each containing a methyl group in position 2, by means of which the two molecules are united together. For the production of dicyanins two quinoline molecules are necessary, one containing a methyl group in position 2 and the other a methyl group in position 4. The presence of formaldehyde claimed in Ger. Pat. 172,118 (Eng. Pat. 16,227 of 1905; this J., 1906, 368) is unnecessary provided air or other oxidizing agent is present.

(Photographic) developer sludge; The nature of. J. I. Crabtree. Communication No. 62 from the Eastman Kodak Research Lab. Jour. Franklin Inst., 1918, 186, 371-372.

A SLUDGE occurring in a deep developer tank in which a "pyro" developer had been used was found to consist chiefly of needle-shaped crystals of hydrated calcium sulphite, CaSO₃,2H₂O. This forms on standing in solutions of sulphite or bisulphite containing as little as 0.025 per cent. of calcium sulphate or chloride. In the particular case examined the calcium salt was introduced with the water used in making the developer, and not as an impurity in the salts used. The sludge has no deleterious effect on the developer apart from a slight reduction of the sulphite content, and the possibility, if it is stirred up, of fine crystals settling on the surface of the plate or film and forming pinholes.

Photoelectric sensitivity of bismuthinite and various other substances. W. W. Coblentz. Scientific Paper No. 322, U. S. Bureau of Standards. Jour. Franklin Inst., 1918, 186, 512.

Pure gallium and silver sulphide show slight photo-electric activity when charged to a negative potential and exposed to light. Exposure to light causes no change in the electric conductivity of tellurium, boleite, pyrites, silicon, and mixtures of the sulphides of lead and antimony, but increases that of crystals of bismuthinite, cylindrite, molybdenite, selenium, stibnite, boulangerite, jamesonite, and silver sulphide. When connected through a battery to the grid circuit of an audion amplifier and a telephone and exposed to intermittent illumination there is an audible sound in the telephone with crystals or cells of selenium and some samples of bismuthinite and of molybdenite.

Iron, cobalt and nickel arcs (photographic records of), wave lengths in the red and infra-red spectra of. W. F. Meggers and C. C. Kiess. Scientific Paper No. 324, U. S. Bureau of Standards. Jour. Franklin Inst., 1918, 186, 513-514.

USING color-sensitized plates made by bathing in pinacyanol and in dicyanin, and in the first order spectrum from a concave grating of 645 cm. radius of curvature, photographic records of the arc spectra of the ferrous metals were obtained in 10 minutes up to 7000 A, in 20–30 minutes from 7000 A to 9000 A, and over 10,000 A with 5 to 10 hours' exposure. For the iron arc 298 lines were measured between the limits 6750 A and 10,689 A, for the cobalt arc 606 lines from 5503 A to 11,623 A, and for the nickel arc 290 lines from 5504 A to 10,843 A. Although the number of lines recorded photographically is several times that recorded radiometrically in regions between these limits where both methods of observation have been used, for longer wave lengths than 10,000 A the radiometric method is still much the more sensitive.

PATENT NEWS

Colored photographic views; method of producing
—. H. Pedersen, Copenhagen. Eng. Pat.
121,776, 15.12.17. (Appl. 18,648/17.)

A transparent base is provided with a multi-color screen, the colors of which are insoluble in water but soluble, for example, in alcohol, and to this is applied a light-sensitive film containing also a white pigment. After exposure through the color screen and development, the silver image is bleached in a bath which at the same time hardens the gelatin film proportionally to the depth of the image, the bleached image is fixed out, and the soluble parts of the gelatin film are then removed by treatment with hot water. After drying the film is pressed into contact with a colorless gelatin film moistened with alcohol, the colors of the screen being then transferred to the two upper films in proportion

to the quantity of the lower film which is left at any part. When the transfer of the colors is complete the upper film is removed, and the lower film dried and transferred by a double transfer process to a black paper support.

Photo-engraving. C. P. Browning, New York. U. S. Pat. 1,285,015, 19.11.18. Appl., 3.6.15.

A metallic plate is provided with two sensitive films, the lower one being much less sensitive than the upper one and separated from it by a transparent protective coating. A negative is formed on the upper film, the lower film exposed through it, the negative and protective coating removed, and the positive developed. The lower film forms the resist in etching the metal support.

Colored photographic element and method of making the same. S. E. Sheppard, Assignor to Eastman Kodak Co., Rochester, N. Y. U. S. Pat. 1,290,794, 7.1.19. Appl., 24.5.17.

To a solution of nitrocellulose in amyl acetate is added an alcoholic solution of a dye which "has a molecular affinity for nitrocellulose" and will not wander from it into gelatin or ordinary photographic solutions. The dyed nitrocellulose is emulsified in a solution of gelatin, the gelatin precipitated by the addition of a suitable electrolyte, the greater part of the amyl acetate removed and the gelatin containing finely divided colored particles of nitrocellulose again brought into solution. This may be used as a colored substratum film on a transparent support for a light sensitive film etc.

Color photography. Hess-Ives Corporation, Assignees of F. E. Ives, Philadelphia, Pa., U. S. A. Eng. Pat. 113,617, 19.2.18. (Appl., 29.11.18.) Int. Conv., 20.2.17.

Autotype Trichrome Tissues

PROBABLY no one cause militates against the adoption of trichrome carbon printing as much as the supposed difficulty of multiple double transfer. The idea of difficulty, however, really springs from failure to recognize that conditions which might cause trouble in the transferring of a strongly printed carbon do not apply to the lightly printed images forming trichrome prints.

The general principle of the process is as follows: Negatives of colored objects are taken on color sensitive plates with special light filters. The negatives are printed on red, blue and yellow carbon tissues, the resulting images being developed and afterward superimposed on one support.

To those familiar with the working of double transfer carbon, the process now described will present little difficulty.

Both tissue and transfer paper should be cut in the same direction of the band, expansion of the paper being negligible in the direction of the length of the roll but appreciable in the width

length of the roll but appreciable in the width.

The tissues should be sensitized in a 2½ per cent. bath of fine granulated bichromate of potash at a temperature of 60° F. Remove the tissue from the solution just before it becomes flaccid which usually occurs in about two minutes, then hang up to dry in the dark.

Three-color negatives are usually thin and as the individual prints are required of light delicate quality, the exposures are rapid. In our experience the approximate ratio is:

Red Blue Yellow .

An actinometer with a thin scale should be

In our opinion the most convenient material to employ is transparent celluloid, as with this material there is no stretch, and if it is placed on a piece of opal glass during development the depth of the image can be correctly judged. The celluloid should be at least two inches larger than the tissue. The Autotype Company¹ also manufacture a thin semi-transparent paper temporary support.

The temporary support must be waxed each time before use, using as little waxing solution as

possible.

After exposure the tissue should be immersed in cold water, 60° F., and brought into contact with the temporary support. Very lightly squeegee and after about ten minutes develop in water of from 95° to 100° F. Rinse in cold

water, hang up to dry.

The ordinary single transfer paper No. 10 is recommended. Soak in cold water for about half an hour and then in hot water, 130° to 150° F., until the coating feels soft and slimy. Place the transfer back into cold water, bring into contact with the yellow image on the celluloid and squeegee lightly. Dry flat, as if hung up there is a risk of the paper buckling the celluloid and splitting the image. When dry the print will strip from the celluloid support without trouble.

Before attempting to transfer the red print, remove all traces of the waxing solution from the yellow image. This is done by rubbing the print over with a piece of rag wetted with benzol

and a little tripoli or whiting.

The celluloid bearing the red exposure and the yellow print on its final support are placed in cold water a few minutes and then removed to a dish containing a transfer solution as follows:

Nelson's	No.	1	gela	tin			1 oz.
Water			•				60 oz.
Tempera	ture	n	ot to) ex	cee	d	70°

Avoid air-bells and bring the two prints into contact underneath the surface of the solution. Remove from the solution placing the paper on a rigid support, the celluloid image can then be gently shifted until in register and held in position by one hand while the squeegee is lightly applied.

When dry, strip, treat the surface to remove

waxing solution, and proceed with the transfer of the blue print in exactly the same manner.

No alum or hardening substance should be used until the final print has been transferred.

Second-hand Lenses

Much time and thought are doubtless being given at the present time by photographers who wish to add to their lens equipment, to the advisability, or otherwise, of attempting to find what they need through the second-hand mar-There is no doubt that a first-class lens, both as regards quality and condition, may even now be bought for far less than it cost new. A word of warning as regard price, however, is needed, for at the present time the prospective buyer will do well not to look for an instrument much under its usual price when new. Recently we were quoted two different prices by two different dealers for the same type of lens. instruments were identical as regard make, construction, series and focal length, as well as aperture, yet one was priced at nearly 20 per cent, more than the other. We went to the We went to the trouble to examine these two lenses, and found that the more expensive one of the two was decidedly the better value for the money. cheaper had been badly used; its glasses were scratched, and its defining power was considerably less. While on the subject, we may point out that when the seller has a reputation to maintain the price asked is a valuable guide as to the condition of the apparatus: anything less than 25 per cent. off the original list price is to be regarded with suspicion. In this way the reputation of the dealer becomes of real value to the purchaser. There is also the guarantee that the instrument offered is genuine and not a forgery, an assurance which the inexperienced buyer will be glad to have as a protection against having inferior apparatus palmed off upon him at far in excess of its value. instance of this came to our notice a short time ago. A photographer bought and paid for a lens supposed to be by a standard maker, whose name was on the lens mount. The vendor was a stranger, the medium a daily newspaper, and the price tempting, and for this reason the deal was rather hastily concluded. In actual work the photographer was dissatisfied with the results produced with the lens, and decided to dispose of it. The instrument was sent to a large dealer for the usual valuation, and in reply came a letter to state that, though the lens mount was that employed and issued by Messrs. —, the components of the instrument were those of an ordinary RR, with an extra glass inserted to carry out the fraud. If that photographer had gone to a reliable dealer, who would in the course of a long experience have detected such a fraud at once, he would have been saved a good sum.—British Journal of Photography.

¹ G. Murphy, Inc. Agents in U. S.

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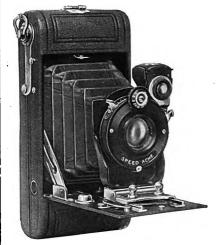
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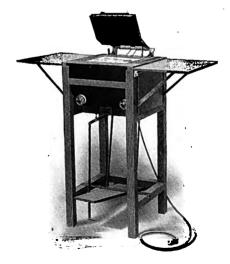
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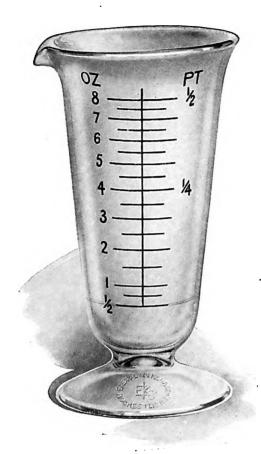
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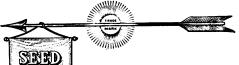
Eastma	n Visible	Graduate,	2-oz.,	-	-	-	\$.25
"	""	"	4-oz.,	-	-	-	.35
"	"	46	8-oz.,	-	-	-	.50
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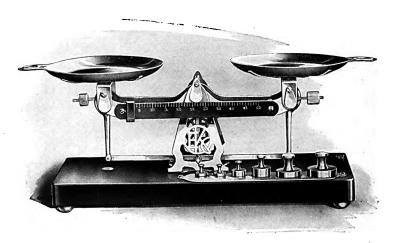
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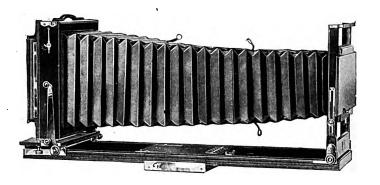
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PHOTOGRAPHIE JOURNAL

JUNE 1919

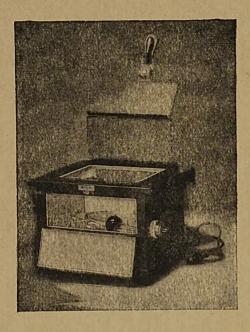
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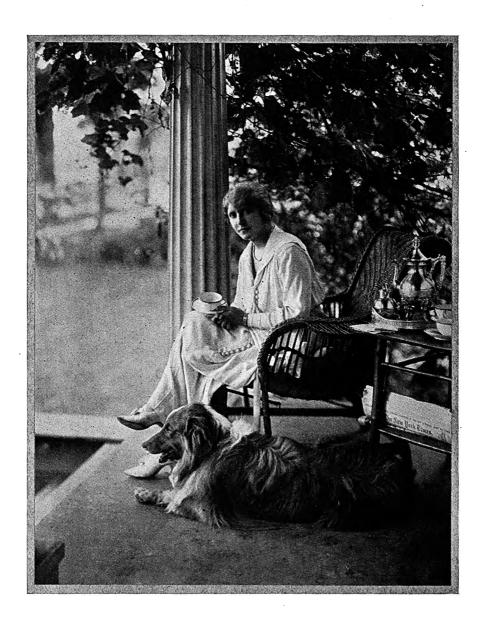
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PORTRAIT—MISS ETHEL NEWCOMB By Charles H. Davis NEW YORK





PHOTOCRAPHIC · JOURNAL · MERICA

VOLUME LVI

JULY, 1919

NUMBER 7



ON SELECTING A LENS

PTICIANS say that the very best lens a person can afford is the one that should be purchased. That is what any one would expect them to say in their own interests. To choose a lens in that way is absurd, and it is much more important to consider the kind of work you are likely to use it for. You can then select the cheapest lens which will do such work efficiently. There are many photographers in existence who have taken up photography simply as a means of artistic expression. The aim of many of these photographers is the production of those extremely blurred, featureless pictures which adorn(?) the walls of our chief exhibitions, and these photographers produce nothing else. We could instance one worker who, while he has a very expensive anastigmat, produces nothing but badly defined pictures from his exquisitely defined negatives. Such pictures may be artistic, but with that we are not concerned. We are only interested in the means of production. Pictures of this type can very readily be produced by the single non-achromatic lens which can be purchased for a few

cents. Therefore it seems a sheer waste of money to spend dollars on an anastigmat. If the single non-achromatic lens is used, all the tedious after-processes, such as interposing chiffon between the plate and the paper, or racking the lens forward and backward when enlarging, can be dispensed with.

Single Lenses

A single achromatic lens will fulfil the requirements of the landscape worker and portraitist, but gives a distorted image. This will not be noticeable when photographing trees and the like. The image given by such a lens is very brilliant, since it has no air spaces, and if it is used as a narrow-angle lens the field will be sufficiently flat to give good results without considerably reducing the aperture. This lens also may be considered as possessing considerable depth of field due to its curvature of field. The nearer an object is to the lens (which is focussed for a distant object) the nearer is the line in which the focal surface for that object cuts the plate,

to the bottom of the plate. So that if the objects in the foreground are not very large, sharp focus may be obtained on both foreground and distance at a large aperture.

Rectilinear Doublets

For the worker who wishes to do general work, and to whom price is a consideration, a rapid rectilinear can be recommended. Such a lens is available for architecture and other subjects in which distortion is not permissible. The definition is good at full aperture (usually f/8) excepting at the edges of the plate. Good definition can be obtained all over the plate by slightly reducing the aperture; but, if a fairly long-focus lens is used, e. g., a 6-inch lens on a quarter plate, good definition will be obtained all over at full aperture. Rectilinears are made with an aperture of f/5.8, and although such lenses are extremely useful in portraiture, where rapidity is essential, they are no better than the ordinary rectilinear for general work, owing to the amount of stopping down required to give good definition all over the plate. A rectilinear is composed of two symmetrical components, each of which can be used separately. Since the focal lengths of the components are equal, such a lens gives only two focal lengths.

Anastigmats

The anastigmat will cover sharply the plate it is listed for at full aperture. When it is remembered that the full aperture for some of them is f/3.5, and that the usual aperture is f/6, it will be seen how very valuable they are to the photographer. A good anastigmat can now be obtained for a very little more than the price asked for a new rapid rectilinear. It must be remembered that the feature of the anastigmat is its ability to cover sharply at large apertures. When stopped down, it is no better than the ordinary rectilinear, so that if the worker is not going to do much hand-camera work where rapidity is essential he might very profitably buy a second-hand rectilinear. There is, however, one important difference between the anastigmat and rectilinear. An anas-

tigmat listed for a quarter plate would probably cover sharply a 5 x 4-inch plate at full aperture, and a much larger plate at a small aperture. A rectilinear listed for a quarter plate would not cover sharply a much larger plate even with a small stop. It will be obvious that the former lens is of great use to the architectural photographer, who frequently has to use considerable rise of the camera front.

An anastigmat is also of great use when focussing in some poorly lit building, since at f/6 the illumination of the focussing screen will be nearly twice as great as at f/8 which is the usual aperture of the rectilinear. Moreover the photographer has only to stop down to secure depth of field, and not to secure good marginal definition. To the screen plate color photographer, a large-apertured anastigmat is of great use, and it is also indispensable to the copyist whose time is valuable. Now, there are many varieties of anastigmats. Some do not permit the components to be used separately. Others permit the use of the components, and since they are often very highly corrected and of unequal focal lengths, three good lenses are con-Preference should be tained in one. given to the latter type of lens, which will be found extremely useful.

The lens for the photographer who has plenty of money to spend on his hobby is an anastigmat which will cover sharply at full aperture a much larger plate than that for which it is sold. As an example, it may be of interest to know that a 6-inch anastigmat can be obtained which will cover a 10 x 8-inch plate at full aperture, viz., f/6.3. Now a lens of focal length 6 inches is normally used on a 5 x 4-inch plate, so that the aforementioned lens would permit the maximum use of the rising front when used with a In cameras made 5 x 4-inch camera. with the so-called "universal" movements such a lens is essential, if good use is to be made of these movements. The maximum rise of front can be used at full aperture, and this is extremely useful to the architectural photographer where a stand camera cannot be erected on account of traffic, etc. It may be objected to the use of such a lens that

a large part of the light it transmits is incident on the interior of the bellows from whence it is reflected to the plate. If this occurs it can easily be remedied by using a hood on the lens; but care must be taken to see that no part of the picture is cut off by it. Caution is especially necessary when using the rising front. Hoods are made which are adjustable in length, and though expensive are undoubtedly the most useful, since their length can be adjusted to suit the amount of rise of front in use. A hood can be made very simply from an old pill box by knocking out the bottom, and giving the interior a coating of dead black. A 3 foci anastigmat used normally so as to include an angle of view from 50 to 60 degrees, but which may be used equally well to include an angle of view of 90 degrees, is the best lens for all-round work, and all who can afford such a lens should purchase one. Such a lens is very useful to the worker possessing more than one camera, as he can use the lens as a wide-angle lens on his large camera, and as a normal-angle lens on the small one. In general, bear in mind what work the lens is required for. Do not get the 3 foci anastigmat if fuzzy pictures are your only desire.

Focal Length

When the type of lens is decided, the next thing to settle is the focal length. As the focal length increases, the perspective becomes more pleasing, and it has been found that a focal length of from one-third to one-half as long again as the longest side of the plate, is about the most useful length for all-round work. If the lens is to be bought new, go to a reputable optician, and he will probably give you some good advice as to the make to select. Lenses by reputable makers are nearly all of good quality, but some makers have a reputation for better workmanship. When the lens is obtained, the actual focal length should be determined in the manner already explained. The effective aperture should also be determined, and if there is much discrepancy between the marked figure and that obtained by experiment, the lens should be returned, as it is worth considerably less than the

price paid for it. The lens should also be tested for flare in the following way: The lens is taken into a room illuminated by a single candle, and the image of the flame sharply focussed on the center of the focussing screen. The camera is now rotated so that the image of the flame moves toward the edge of the screen. If flare is present a bright spot will appear on the opposite side of the center of the screen.

Testing Second-hand Lenses

When buying a lens second-hand, greater care is necessary, and the lens should be obtained on approval before it is purchased. Even if the lens is marked with the name of a reputable maker, it should still be tested thoroughly, for unscrupulous dealers have been known to engrave cheap unknown lenses with the name of a good maker. The lens should first be tested for color by looking through it at a piece of white paper. If there is a yellowish tinge, the lens should be rejected, as such a color makes a considerable difference in the efficiency of the lens. The lens should then be tested for flare, and the abovementioned test will also show whether spherical aberration is present. If it is, the image of the flame will not remain sharp as it approaches the edge of the screen. The next test is for chromatic aberration, and perhaps the best test is the following, recommended by the late Traill Taylor: A row of numbered cards is placed co-axial with the lens and at a distance of a foot or so apart. From the camera the cards appear as a fan, and the lens is sharply focussed on, say, number 8. A plate is exposed, and if on development, card No. 8 is not sharp, the lens is not corrected for color. the lens is alleged to be an anastigmat, a further test is necessary. An object should be focussed at full aperture, and the camera rotated until the image of the object approaches the edge of the screen. If both vertical and horizontal lines are still defined sharply the lens is free from astigmatism. If they are both blurred, or one set sharply defined and the other set blurred, the lens is not free from astigmatism, and should be returned or a considerably lower price paid for it.

COMMERCIAL PHOTOGRAPHY

Choice of Process for Prints

THE choice of a printing process for commercial work must depend not only upon the taste of the photographer, but upon that of the customer. Specimens of the various processes— P. O. P., bromide and platinum—should, of course, be shown when the order is given, and the matter settled then, if possible. As a general rule, if there are no special considerations, it will be found that a fairly warm-toned P. O. P. print will be most generally acceptable. Heavy matt bromide should be avoided. as should also toned bromides. A good glossy or carbon surface bromide or gaslight print leaves little to be desired, and may be preferred by some clients, but there is a "bloom" about a good P. O. P. print which makes it very attractive. For special work, such as framed pictures for the showroom or board room, platinum may, on account of its permanency, be chosen, but the present price hardly permits of the distribution of such prints on any considerable scale.

The mounting of prints must largely depend upon the use to which they are to be applied. For example, prints which are to be framed or otherwise displayed usually require a considerable amount of descriptive matter beneath or around them, and in such cases a white or buff plate-sunk mount is the most suitable. For travellers' sample portfolios a darker board, with the description pasted upon the back, will be found to keep in decent condition for the maximum time. In some cases the prints may be mounted upon linen or tracing cloth, and for this either the wet or dry mounting process can be If it be desired to wetemployed. mount prints on linen, the easiest way is to stretch a length of material upon a large board or table, and to fasten it down with plenty of tacks or push-pins. Give it a good coating of starch or dextrine mountant, and, after well pasting the backs of the prints, lay them closely together on the linen and rub well into contact. When quite dry, the whole length is taken off the board and cut up. When so mounted the edges of the prints should show no margin of fabric, as this looks very untidy if it becomes soiled or frayed. For drymounting it is desirable to use a holland or linen with some dressing in it, as this ensures better adhesion of the tissue.

Treatment of Negatives

It will frequently be found that the backgrounds of negatives are objectionable and must be removed, this being the rule rather than the exception in catalogue work, in which a clouded background or soft shadow effect is usually introduced by means of the air-brush. Blocking out is a delicate operation, and, although perfectly simple, requires a very steady hand and considerable practice to avoid a ragged, broken outline. An expert will accomplish the task, using a fine sable brush and opaque color only, but the less skilled will do well to avail themselves of various dodges to simplify the work, rulers and "French curves" being used to get clear outlines, and pen and pencil as well as brush to draw the outlines. Various expedients have been employed to mitigate the hardness of an outline drawn in opaque color, and some workers prefer outlining the subject with a colored dye-red ink answers well, and filling in with opaque beyond this. Others outline with a soft lead pencil; this gives a semi-opaque outline, and also, by virtue of its greasy nature, acts as a natural barrier to prevent the water-color opaque from running over the edge. Very fine lines, such as the spokes of bicycle wheels and the rigging of ships, are best blocked out altogether, and either drawn in upon the print or carefully cut through the opaque when dry. With a little practice it is easy to make the blocking-out of such density that the spokes or ropes will just be indicated in the print and serve as a guide for ruling in.

If a subject has to show a black background there are two ways of proceeding:

The first is to use the knife, and after carefully cutting through the film round the outline, to scrape the glass quite clean; and the second is to paint the subject very carefully with what engravers call a "resist." Thin asphaltum varnish answers very well. Then dissolve the unwanted parts away with strong ferricyanide and hypo, or the iodin and cyanide reducer. When the background is clear the film is washed and dried, and the black varnish removed with turpentine. If a faint brownish image remains it is probably due to pyro stain, and can be removed with the ordinary alum and acid clearing solution.

Much may be done in "working up" the negatives for printing by using matt varnish upon the glass side, a soft pencil or powdered blacklead and a stump serving to reduce heavy shadows. Many prefer to cover the back with thin translucent paper, and to work upon this. Excellent results are obtainable this way. The paper may be cut away over dense places, and extra thicknesses cut to shape and pasted on where needed.

Working-up for Catalogues

When prints are to be reproduced by the "half-tone" process for catalogues, it is often necessary to work them up in black and white to emphasize details and to obtain the necessary brilliancy. This working-up is quite different in character from that usually done, as there is no effort to conceal the handwork or to make it appear like the basic photograph. Black and white used pure or in admixture to form grays are always used whether the print be a bromide or a warm-toned P. O. P. As a rule, the subject, be it an engine, a sugar-basin, or a pair of boots, is printed with a perfectly white background, a cloudy "shadow" is added with the aërograph, and any details which it is desired to show are worked in with a brush and In many cases, whether the color. original background remains on the print or not, it is painted out in solid black or white. If in white, aërograph work may be added, as upon white paper. It is essential that suitable

pigments be selected for this work, so that the visual values of the worked-up print are correctly reproduced on the block.

Chinese white is very unsuitable, as its photographic and visual values are very different. Flake white, also known as blanc d'argent, reproduces perfectly and covers well, but unfortunately it discolors quickly, and the prints are useless after a few weeks. Barvta white. generally known as "process white," is excellent and permanent, but lacks the opacity of the flake white. Process black or artists' black should be used in preference to Indian ink, which reproduces darker than it appears, or blueblack, which reproduces lighter. process pigments are as cheap as any other kind and are adapted for aërograph as well as ordinary work. The beginner in this class of working-up should endeavor to borrow from a processworker some worked-up originals and, if possible, proofs from the blocks made from them. It is easy to fall into the error of working too finely and wasting time in putting in unnecessary gradations and fine detail.

What to Charge

This is a point on which it is difficult to say much of a definite character without misleading. It would be foolish even to hint at figures, for local conditions, prices of materials, the quality of the work, the magnitude of the order, and any special difficulties to be encountered are all important factors which influence the cost of any piece of work. The one thing to be sure about is to charge a remunerative price, and never to fall into the error of taking on work at a "fill-up" price. Every job should be on a paying basis and should bear its proportion of overhead expenses such as rent, rates, taxes, insurance, light, maintenance of plant and premises, as well as the mere cost of wages and material. I have known a man do a large commercial business in pre-war times on a basis of 75c. for a 12 by 10 negative and proof. He had to work early and late, and when a slack time came he had not 25c. in hand to tide

him over. He had taken away other men's work, lowered the standard of price with certain large customers, and barely made an operator's wage by doing two operators' work. My advice is this: First ascertain what your standing expenses average per day, estimate how long the job will take, and start with the due proportion of this cost. Add next a good operator's wage for your own time and the assistant's wage, if you employ one. To this add cost of

materials, allowing for waste, travelling expenses, and any other incidentals. Then double the amount so obtained, and if you are a moderate man you should be satisfied. This is a manufacturer's method, and makes no allowance for special skill or artistic ability, and only upon these lines can commercial work be satisfactory. The method indicated may be open to challenge, but at least it steers between fancy prices and price-cutting.

RUSKIN ON "ATMOSPHERE"

"THE first and principal thing to be submitted is, that the clouds are there. Whether we like them or not, it is a fact that by far the largest spaces of the habitable world are full of them. That is Nature's will in the matter; and whatever we may theoretically determine to be expedient or beautiful, she has long ago determined what was to be.

"But not only is there a partial and variable mystery which is caused by clouds and vapors throughout great spaces of landscape; there is a continual mystery caused throughout all spaces, caused by the absolute infinity of things. We never see anything clearly.

"Mist of some sort, or mirage, or confusion of light, or of cloud, are the general facts; the distance may vary in different climates at which the effects of mists begin, but they are always present. . . . Our whole happiness and power and energetic action depend upon our being able to breathe and live in the cloud. . . . As soon as people try honestly to see all they can of anything they come to a point where a noble dimness begins."—John Ruskin, Modern Painters.

THE ATMOSPHERE OF ANY PLACE OF BUSINESS IS OFTEN DETERMINED BY THE MENTAL ATTITUDE OF THE MAJORITY OF THOSE WHO LIVE IN IT.

-DANIEL BAKER



"THE FOUNTAIN BASIN"

BY CHARLES H. DAVIS, NEW YORK

OUTDOOR AND GARDEN PORTRAITURE

By CHARLES H. DAVIS

PART II

In gardens or elsewhere—the photographer endowed with an artistic temperament and aspirations has the opportunity of his heart's desire. Practically every sort of a background, environment and lighting is possible. It requires only patience and the ability to see, select and record. The subject may be so placed as to get perfect relief, roundness, and good modelling, and added to these virtues we may produce delightful gradations of light and shade and delicate detail. These attributes of true pictorial portraiture are not to be lightly passed over as unessential, as

some self-styled pictorialists would have us believe.

The marvellous possibilities of open air work are being demonstrated daily and nightly at the moving-picture exhibitions. They offer great opportunities for photographic study. For instance, in the charming presentation of "Rebecca of Sunnybrook Farm" there are many beautifully lighted scenes; in fact, unusual pictures may be constantly observed in the higher-class films. The magic of the *contra lumiere*, and the shadow lighting, is made such a feature that one is constantly impressed with the beauty of this most flattering of all

lights. It adds an ethereal quality and a poetic witchery that is always a delight to the eye and especially to the gentler sex. In recording light or blonde hair this style of lighting is almost imperative. The reader will note in the group of "The Fountain Basin" that by means of back lighting I have been able to preserve the blonde character of the hair in all three subjects. Front or side lighting would have re-This illustrates sulted in darker hair. another advantage of pictures in the open. There is enough play of light all around the subject to get ample illumination in the shadows, even when working in full sunlight, providing sufficient The more brilliant exposure is given. the light the longer the exposure must be to get into the black shadows. Interesting sunshine lightings may also be observed and studied in the "movies." Time was when sunshine pictures were dead black-and-white; but the clever camera men have discovered the right exposure and development, so that now there are few more beautiful effects to be seen than those made in the California sunshine, which seems unsurpassed for actinic quality and bright illumination. These odd and unusual effects that are never made in studios are the very things most sought after by appreciative people, and are not only more beautiful than commonplace lightings, but do much to render one's work distinctive, and tend decidedly to enhance the photographer's reputation. results are, moreover, delightfully picturesque and place the successful makers quite in a class by themselve's.

Much good out-of-door portraiture can be produced on overcast days. The sky is curtained by clouds and locations are readily found in gardens, or near buildings or walls, where the light from the sky on one side is unobstructed and the other side more subdued. This will give almost a skylight effect, at times. Under the edge of a tree is a very successful place to work and porches are quite ideal for head or figure poses. A spot near the end of the porch admitting light from two sides often gives a charming effect, and if a head picture is to be made the wall of the house—out of

focus-makes an agreeable background. In gardens where there is a vista with somewhat distant trees we find most delightful arrangements. Such a picture as "The Greeting" is readily produced in similar locations. This particular picture, which is considered by many to be a great success, was actually made in a grass-grown roadway alongside of a flowering berry bush. A rainstorm had just ceased and everything was so wet that the ladies were obliged to wear overshoes. The sky was quite overcast. I worked against what light there was; for there is always a direction to the light even if the sun is obscured. You can readily test this for yourself by standing a pencil on a piece of paper. It will unfailingly cast a slight shadow in daylight hours. I make many pictures on dull days and with a certainty of success. Then all shadows are soft, and this condition is perfect for lined and



PORTRAIT OF A YOUTH BY CHARLES H. DAVIS, NEW YORK

wrinkled faces. These soft out-of-door lights obviate a great deal of the retouching sometimes demanded by sitters of this character.

Another very desirable spot for a portrait is alongside of a high hedge or shrubbery. The "Portrait of a Youth"

was made in the rear of a country house against a hedge. The lighting is exceedingly agreeable and the background quite unobstrusively ideal. Hardly a touch was necessary on the

negative.

On the lawns surrounding country houses are to be found many large trees. the trunks of which form very attractive backgrounds. If a vista occurs at one side a pleasing composition of tree, figure and vista is frequently possible. A group of two. apparently engaged in conversation, on a pathway, is another pleasing effect always meeting with the approbation of the clients, and affording a picturesque arrangement with a suitable background. In fact, the possi-bilities of lawns with shrubs and trees and little vistas are almost limitless. A group on a bench under a large tree is easily managed and can be most attractively lighted. All of these out-of-door arrangements may be made with very brief exposures, even on dull days, and they are a winning department of Home Portraiture.

An example of producing a dark background in a portrait without its actual existence behind the subject, is shown in the "Bowl of Blooms," where the deeply shaded porch interior becomes in effect an atmospheric black background. The subject sits upon the porch wall or rail and the camera is placed upon the lawn. This idea may be used effectively at almost any country house. The short exposure required by the sitter is insufficient for the dimly lighted porch interior—and presto! there you are.

When we look toward the sun or any brilliant light, we instinctively shade our eyes with the hand so that we may see clearly. For this reason a lens shade or hood is an indispensable part of a photographer's equipment. Light not coming from the picture area is not wanted in the lens; it produces fog, or semi-light struck plates. Perfect definition and clarity of results cannot absolutely be attained without a hooded lens. The lens may be shaded by various makeshifts and many times with disastrous results to the corners of the plate, but an adjustable hood is the most convenient and serviceable. I use one of

my own construction designed on the "lazy tongs" principle. It is made of strips of $\frac{1}{16}$ inch x $\frac{1}{4}$ inch brass, riveted loosely at the joints, to permit freedom of movement in adjusting its length. The free legs at the back are curved to lie harmlessly against the camera, and the top is simply hooked on to the camera front. The whole contrivance is covered with black velvet and has a small set-screw for fastening the exten-In working against the light the hood is pulled out enough to cut off all top and side light up to the picture limit, and the degree of extension fastened with a set-screw.

Regarding pictorial photographs I wish to say that the use of a soft-focus or diffusing lens will not in itself give a pictorial quality. This fact seems to be overlooked by many self-styled "pic-The fundamentals of good torialists." composition, balance of light and shade and lines of beauty must always constitute the agreeable attributes of any pleasing picture. All an imperfect lens can do is to suppress detail, and it must not be imagined in suppressing detail that pictorial quality is the automatic and inevitable result. On the contrary the loss of detail frequently enables one to see more clearly how very little some pictorialists" know about drawing and composition. The masses are made more solid by lack of detail, and often there is nothing to mitigate the bald imperfection of the result. Where hands are prominently shown on a near solid background of monotone, black or nearly so, the claw-like effect produced by the repetition of lines in the fingers becomes quite startling and repellent. Gracefully posed hands with changing and confluent lines in the fingers would be attractive in this treatment, but never otherwise. At the last Pittsburgh Salon I noted in particular a picture displaying these faults, and also another of an old lady with a cloak covering all but her head and three fingers of one hand. These fingers were without grace—just three stiff fingers, about as much alike as three bananas on their stem and arranged much the same. The cloak showed a decided lack of lines of grace, and the face exhibited none of the attributes of good portraiture. As reproduced in the current periodicals the whole effect was smudgy, stiff and quite lacking a lovely pictorial quality. How can any one think that such a result is pictorially interesting?

This brings me to another point: Why does the amateur believe, because he has a magical means of recording his work. that he can compete with artists who have spent years of study, under the guidance of acknowledged masters, before they venture to place their work on exhibition? Some of our self-styled pictorialists seem to think that they can jump full-fledged into the arena, and they actually do offer to the public, at exhibitions, all sorts of ill-considered efforts, and because they have used a soft-focus lens they serenely and triumphantly believe they are achieving masterpieces. Negatives are habitually undertimed and underdeveloped, yielding prints that have the slightest possible scale of gradations, some being in such a low key that they possess no lights whatever. These prints are in some cases so dark throughout that when under glass they mirror the features of the observer, instead of revealing an interesting work of art. This is a very poor substitute for a portrait of real pictorial photography. It is, in fact, pictorial piffle and the authors might justly be called pictorial philanderers coquetting with art.

I am not decrying the use of soft-focus lenses or condemning novel or individual effects when they do not violate all the accepted canons of art. I am trying to impress upon the reader the necessity for more art knowledge, with the aid of which he may be able to produce artistic and genuine pictorial results. I have seen many charming, even beautiful, pictures made by the use of uncorrected lenses. I have seen better, however, made by the pinhole and by diffusion printing from sharp negatives. Every now and again, out of the fog and disappointment of blur and foozle and falsity, emerges a real picture. Such a one is the frontispiece of the May number of this magazine. It has atmosphere, beauty of massing and great pictorial charm. I know from my own experience that these results may be achieved, but not regularly and with They are the result of a certainty. happy combination of fortuitous circumstances with everything working together for good. It needs skill and knowledge to produce pictures. I should say that the first essential would be the ability to make technically good negatives, with fully corrected lenses, embodying also good composition and irreproachable (or nearly so) drawing and lines. When this is achieved, the soft-focus variations may be begun with a certainty of occasionally producing beautiful results—provided always that wooziness is not overdone.

The pianist learns to play scales with freedom and faultless execution; this is, in fact, as every one knows, the foundation of good piano technic. The photographer, likewise, must first of all, I assert, become a good technician before he can achieve interesting pictures. grant you, that technic is not interesting pictorially. It must be supplemented by other desirable essentials. Another thing: belonging to a mutual admiration society, such as some of the organizations seem to be, is not a certificate of pictorial prowess-it is, judging by the results shown, more of a demonstration of intrepidity. Some of the Salon pictures that have been awarded a place by kindred spirits, prove this conclusively. Even at our professional conventions there is evidence of mutual aberration of the same kind. No matter where the fog leads there seem to be some who will venture to applaud and follow, though I am sure they could not give a satisfactory reason therefor. The futurist painter is a bug by himself. He sees red water, green skies and variegated people; but the properly made autochrome shows no trace of these things in Nature. What a blow the autochrome must be to such a painter! Let us beware of perverted photographic vision, and likewise let us endeavor to make good pictures that need no faking and apologies.



"THE BOWL OF BLOOMS"
BY CHARLES H. DAVIS
NEW YORK



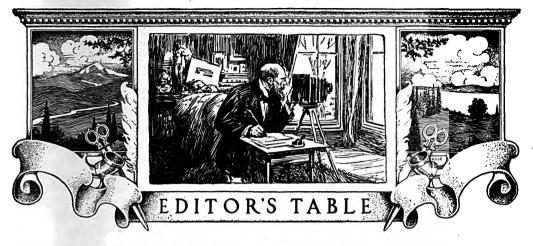


"ON THE LAWN"

BY CHARLES H. DAVIS

NEW YORK





RAISING YOUR STANDARDS

THE "consumer" is credited with being responsible for the prevalence of "the usual thing" in photography. If this is true, he has much to answer for. Before many of us were born—we have the evidence of old-time prints—he had introduced the vase and the column, and had begun to crown the latter with an inverted stovepipe hat. He brought in impossible poses and worse backgrounds, and he demanded "billiard-ball" retouching. Possibly, too, he clamored for the vignette, and for prints that faded. Poor consumer, his sins are heavy upon him.

It is easy to saddle the public with the responsibility for uninspired work; but whether it is quite fair is another matter. Does the public really clamor for poor work? We have known several men who have not been adequately rewarded for the good work they were doing, but we have never known a man who has actually lost ground by improving his work. And while we have seen many a business in a condition of chronic stagnation, owing largely to lack of quality in the work produced, we have seen several which have forged ahead, financially, when the standard has been improved.

The photographers in wealthy locations have discovered that a good grade of work pays. It is in the poorer quarters where the discovery has not yet been made. The workman—the man

whose income comes as the result of solid hours of work reckoned in daily chunks of time—is the man who is going to have value for his money. He will not spend an extra dollar unless he sees the extra value; but if the value is there he will often take it. It is quite possible to rate his purchasing capacity too low.

Much has been said about old and new kinds of portraiture, often by people who scarcely understand the differences and the merits of the two kinds. Some wise persons have adopted the plan of supplying either kind, and where they understand each kind there is little doubt that this plan is a good one. Where, however, they read the two kinds to mean respectively good and bad work they soon drop the one from inevitable lack of support, and return to their prefer-Where a man has the requisite versatility he ought to be able, by the variety of his work, to meet any individual taste; and be able, too, when the taste has been gauged, to suggest a class of picture slightly in advance of the original preference. For although we occasionally find a photographer in whom the art temperament—which is a thing distinct from art knowledge—is abnormally developed, in the common run of cases common sense and business ability are the factors which govern success.

To say that the public will not stand for good work is a slander. We have its answer in the success of many men who are doing work of a high grade. They

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have offered work better than the public were getting, and the appreciation of it has conclusively shown that it was not better than the public wanted.

Some of these men, it is true, have confined themselves to one class of work; and many of the others are known to push some specialty. The tendency, if a man has any of that enthusiasm which is often called "artistic ability," is to push ahead along one line. The man who raises the standard of his work all around will find that it pays, and there is no need for him to lose a single order.

TREATMENT

THE photographic art has made such huge strides of late years, especially with regard to the personal treatment of a picture, that we no longer look upon an artistic photograph as the work of camera and lens, but rather as the sun drawing of an individual who has stamped his character, purpose, and individuality in every line. A few years ago, one who used the term "drawing" with reference to photography, would have been laughed at as the originator of a mere absurdity. Today we recognize that workers in gum, in oil printing, and even to some extent in carbon and platinotype, actually do draw the pictures which are presented upon the walls of exhibitions. A few years ago no photograph which did not bear upon its face the accurate impression of a thou-

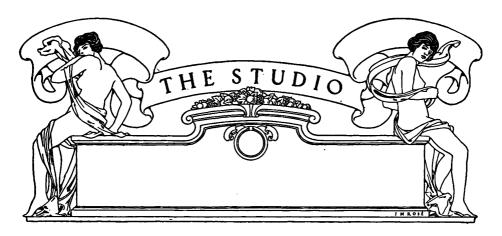
sand details was considered worthy of a second glance; today, we have learned the art of suppression and omission. No longer does the cry go up that we must . include every thing which is before the lens, and that on that account our art is forever handicapped; the time has come when men can leave out or include at their pleasure, and to the extent, too, once possible only to the wielders of the pencil and brush. True, little of this is done in the field. Without, in any way, under-rating the great importance of point of view, of lighting, of choice of subject, and of composition, still, the great value of the picture depends upon its after-treatment, and it is in this treatment that the individual asserts himself and displays his full stature. It is the treatment of the print that the reserve in tone, the tranquillity and largeness of line, and the refusal of unnecessary objects of interest, show themselves, and declare the artist to be an exponent whose mind is habitually noble. "The refusal or reserve of a great artist," says Ruskin, "cannot be intimated, it is only by reaching the same intellectual strength that you will be able to give an equal dignity to your self denial. No one can tell you beforehand what to accept or what to ignore; only remember the greater your strength, the quieter will be your manner. secret of high success will be found, not in a fretful and various excellence, but in a quiet singleness of justly chosen aim."

WORK

HE BUILDS HIS TEMPLE ON THE SHIFTING SAND WHO HOLDS NO TOILWORN HAND WITHIN HIS OWN; A PORTLESS MARINER BY FATE'S WIND BLOWN, HE WRECKS HIS SHIP ON FAILURE'S DEADLY LAND. WHO HAS NOT HIGH IDEALS AT HIS COMMAND KNOWS NOT CREATION'S JOY, NOR CAN ENTHRONE THE MIND'S HIGH MAJESTY, BUT WALKS ALONE, NOR FEELS THE RAPTURE BORN OF WORK'S DEMAND.

THEN DO THE THING WHICH LIFE ORDAINS FOR THEE FOR ITS OWN SAKE, AND SET THY SPIRIT FREE FROM ALL THAT HOLDS THEE TO THE LESSER THOUGHT; MAKE OF THY TASK A SHRINE, AND KNEELING THERE LIFT TO THINE EYE THE THING THY HAND HATH WROUGHT, AND IN THY SOUL BREATHE DEEP ACHIEVEMENT'S AIR.

-EDWARD DE WITT, in The Printing Art.



PRACTICAL PAPERS ON STUDIO WORK AND METHODS

About the Reception-room

EXCEPT in the cheapest class of studio, where customers walk in and ask to be photographed in the same way as they would go into a haberdasher's for a packet of pins, the reception-room is one of the most important departments of the whole establishment. The photographer should never lose sight of the fact that he has not only to make photographs, but to sell them, and that the selling has to be done first. In nearly all business concerns the greatest importance is paid to the organization of the selling department, and the principal salesmen or travellers are the most highly-paid members of the staff. It is so even in a few photographic businesses, for I know of one instance at least where the operator, a very efficient man, received \$1500 a year while the presiding genius of the reception-room made more than three times as much, while in others the lady receptionists are almost as highly paid as the operator. I do not give these examples to prove that a highly-paid receptionist is a necessity in every studio, but to point out the importance of this department in almost every class of business. As our Transatlantic friends would say, we are not in photography for our health, but to make as good a living as possible, and to this end we must put forward our wares in the most attractive way.

The reception-room should not have the appearance of an office or shop, but as nearly as possible resemble an ordinary room, where people should feel that they can inspect the specimens at their ease, without being hurried in their choice of size and style. I was recently in a reception-room nicely kept, but with hardly room to sit down, the greater part of the space being occupied by two huge roll-top desks, one for the receptionist and one for the proprietor. The selling was all done at a small table against one wall, and the floor space so restricted that if a second sitter came in, he or she and her friends had almost to rub shoulders with the previous arrivals. This is embarrassing to both parties, as one's portrait is a private thing which is not to be discussed in public, the probable result being that a much smaller order was given in order to have the matter over and get out of the way. In contrast with this, I have seen a reception-room where the prospective sitter was interviewed in a secluded corner, while other visitors waited and looked at pictures in the main part of the room, plenty of comfortable seats being provided. Such an arrangement may not always be possible, but the idea is there, and it should be worked upon as far as conditions allow. In quite a small room a table and a couple of chairs can be arranged for the confidential talk, and all other seating accommodation placed at a judicious distance. Such seating accommodation, it may be hinted, should be kept clear for use, and not occupied by specimens and parcels.

A separate desk or table should be provided for bookkeeping, spotting, or any other work which the receptionist does to fill up her spare time, and, if possible, this should be screened off so that it cannot be inspected by prospective sitters. There is nothing so annoying as to have a friend call upon a sitter and tell her that she has seen her portraits in the course of finishing, adding a few gratuitous criticisms at the same time, while there are inquisitive folk who will not hesitate to quiz at business papers, which one may have the best reasons for keeping private. So lacking in manners are some folk that I have seen a man open a ledger to amuse himself while waiting.

An effort should be made to keep the room as fresh-looking as possible, and distemper or wall-papers should be renewed as soon as they become dingy. The studio is the workshop, and need not be so spick and span, but the reception-room gives the first impression, and that should be a good one. Hot colors should be avoided, cool grays and greens being usually suitable, and harmonizing better with the work shown. Furniture should be as light in construction as is consistent with strength, and, above all, chairs and settees should be restful. It is not necessary that great expense be incurred in securing this, for a better effect can often be produced with cane or wicker and chintz than with carved oak and velvet. An effort should be made to show some individuality, and not to follow the beaten track too closely.

All specimens should be kept in good condition, and only up-to-date styles shown. In too many places the walls of the reception-room and staircases are cumbered with enlargements and

paintings of the Victorian period, which waste space even if they do no other harm. I sometimes think that the success of some of the more recently established photographers is due to the fact that they exhibit no obsolete stuff. Regarding the loose specimens, these should be scrupulously clean and mounted in the current styles. Mounts change in fashion unless plain papers are used, and the modern public is quick to notice anything which is not quite up to date. All specimens should be kept in some sort of classification, so that it is not necessary to hunt through a heap of prints to find a certain style which may be desirable to bring forward. Specimens which are not often required are best kept in portfolios, carefully classified into such divisions as wedding groups, equestrian portraits, fancy dress pictures, and the like, and when various printing processes are used it is as well to have a set of the various kinds made from the same negative, so that a comparison may be more easily made. The outsider is more likely to be influenced by the subject, and will order from a bromide specimen of a subject which strikes her fancy instead of the more remunerative platinum or carbon.

Minatures and colored work should be carefully and appropriately framed, and the price quoted should include the frame. The photographer will then be spared the agony of seeing a delicate water color on opal framed in maroon plush, a shock which I have experienced.

The actual selling calls for the greatest tact. It is not sufficient to be attentive and keen on getting a good order; care must be taken not to wound the self-esteem of the prospective sitter. To avoid doing so, the receptionist should carefully abstain from bringing forward any styles which would not be suitable. Thus one should not offer full lengths to a dumpy sitter or profiles to one with a nez retrousse. In the first instance, should the sitter desire a full length, it should be pointed out that the face is then very small, and a three-quarter length suggested. This is much better than hinting that the lady has not the figure to make a full length. In the second case it may be pointed out that a profile, while making a good picture, is rarely a characteristic portrait. If in either case the request is persisted in, care should be taken that other positions are also taken and submitted, in which case the sitter will then discover for herself the fact which she would have resented being told point blank. Every effort should be made to secure a better order than the sitter originally contemplated, but this must be done skilfully and without any appearance of pushfulness. The superior appearance, the guaranteed permanence, or the fact that the picture shown is absolutely in the latest style should be pointed out, and in most cases the desired result will be obtained. The mere The mere mention of the fact that some well-known person selected that style will sometimes do the needful. If the attempt should be unsuccessful, there should be no appearance of disappointment, but the order accepted with the same apparent cheerfulness as if it had been doubled. In many cases a promise of extra positions, with a hint that a re-sitting will be willingly given, will go far to induce the customer to take the better style, but in no case should there be any inference that any less pains will be taken with a small order than with a larger one.

A clever saleswoman—it is rarely a man nowadays—can greatly increase the turnover by the introduction of side lines, such as miniatures, enlargements, and copies. Few people have any idea of the excellent results which can be obtained from old portraits, and I have more than once obtained a good order, in addition to the sitter's own portraits, by showing a very successful enlargement from an apparently unpromising original, such as a faded C. D. V. or an amateur's snapshot. Hundreds of people have small pictures of friends who have fallen in the war, or who have died, without ever visiting a studio, which they would be glad to have reproduced in good style did they realize what was possible in this way. I have taken as much as \$150 for portraits of a schoolboy who had only once been photographed, and that in a group. Such work is usually ordered in platinotype or carbon on account of the absolute permanence, which can be guaranteed. photographers who are not used to a high-class trade fall into the error of quoting too low a price for such work, but it is surprising what people will pay for a good picture of this kind. If it be beyond the power of the photographer to do so himself, he can entrust the work to a first-class trade house and still make a handsome profit. I can recall one case in which an order was taken for a \$150 oil painting from a tiny head which someone had pasted inside his watch case. At least half of this was net profit to the photographer, whose part of the work consisted in making a careful copy and a plain enlargement as a guide for the artist.

I am afraid I have been rather discursive on this subject, but I am desirous of pointing out that the management of a railway ticket-office and that of a photographer's reception-room need to be conducted upon different lines, although, perhaps, I am doing an injustice to the tourist agent, for I have seen a clever clerk persuade a would-be traveller to extend his tour by pointing out how much more he could see for only another \$5.—B. J.

The Physiology of Posing

The records of early portrait photographs are full of instances which show the sitter in a chair, foursquare to the camera, his feet flat on the floor and his hands on his knees. The idea of grace did not enter into the operations. It was indeed almost an unknown factor at the time when portraiture was still largely an affair between the patrician and the painter. Since then, however, posing has become a popular accomplishment—an outcome of human vanity grafted upon the influences of the art school, gymnastics, dancing and the stage. But beyond this psychological impetus there is a physiological one which is of far greater value. Healthy bodily training of the young and the pursuit of outdoor sports have developed not only grace of movement and beauty of form, but also, in all but the most hopeless classes of ignorant and insensitive people, a real sense of grace.

These conditions affect the professional photographer considerably, for they mean that intelligent, healthy and educated sitters may usually be left to their own devices in the matter of posing, and that only in special cases need the

operator take the sitter in hand.

Our old friend the intrepid amateur has usually done this to some purpose, thereby opening our eyes to possibilities in posing which were formerly undreamt of except in the way of nightmare. His failures seem to have been due to the wish that sitters should for the time being appear as star artists, contortionists, and lunatics. The last phrase is not stated with exaggeration; for who would persuade a moral and social reformer to pose "in the altogether" unless the idea was to show a man with a reputation as sitting unclothed and therefore not in his right mind?

But there is no need to concentrate upon this side of amateur endeavor. Its successes may more profitably be accepted as examples upon which precepts may be hung. He seems to have set out with a laudable intention of avoiding the mid-Victorian traditions at all costs; especially the drooping hand over the pedestal sort of thing. His unconventionality has arisen from the fact that he had started without a studio and its accessories. The home and the back garden have afforded him all his resources: but the home at any rate had stood him in good stead. It has made the homely pose possible. It has led to that characteristic touch which is the soul of a good portrait. For whether a sitter be taken at work or at play, or with a child at the knee, there is usually something about the result which surpasses in attractiveness and convincingness the ordinary "half length" and "head" which form the staple of the professional's stock-in-trade.

It is obvious that the more of a figure that is shown in a portrait the greater are the opportunities for a characteristic pose which shall enforce the likeness as well as add grace to the design. Heads are no doubt safe and quick, but the loss of "line" and a convincing attitude is something of a set off. It seems, therefore, if I may suggest so much, that a deal might be gained by a more frequent adoption of this additional resource to secure further novelty and variety. I admit that the more rope an operator takes the greater is the risk of hanging; but that danger is not imminent with readers of these pages.

The pose must be, or must look as though it were, spontaneous. It must suggest action, not by being an instantaneous presentment of actual movement; but by being a phase—a waiting phase—of some continuous gesture, as when a person is suddenly appealed to and as suddenly turns to the speaker. The pose will then be vigorous and animated, yet by reason of expect-ancy, quiescent. Years ago a painter exhibited a portrait of John Burns, his arms akimbo, his head slightly on one side, his expression one of receptivity. He appeared to be saying, "Well, what is it? I'm all attention." The result was magnetic. It had all the bustling characteristics of the sitter, whose body, quite as much as his face, contributed to the likeness.

The principle underlying such a style of pose is unimpeachable, for it admits of this possibility—the touchstone of good posing: the sitter

might indeed remain thus in the attitude of arrested movement for as many moments as a spectator would be likely to look at the print.

It must be as obvious that a pose which shows a sitter as in the act of performing some transitory motion, such as placing flowers in a vase, without this waiting phase, must pall on a sensitive person looking at the print; for in spite of himself he waits to see the action completed. Boredom and irritation are inevitable.

Such disaster is, of course, avoided by doing without action altogether. The reposeful arrangement of "Madame Recamier" on the sofa, or of "Whistler's Mother," is an ideal one in its way; but although it wears well its possibilities are limited, and its unruffled calm would certainly not serve for lively children or choleric majors. We must have signs of life in order to secure character; but with the dancing and acrobatic poses of the experimenting amateur before us it seems policy to avoid at least the transitive action.

The virile swing of the body and its members, which makes for the fine "line," is in reality more a matter of physical fitness than of striving after a pose. The ill-conditioned person who, either from age, infirmity, or physical defect, uses perhaps one or two joints and muscles instead of a dozen or two, is debarred from that unconscious relaxation which is the soul of grace. Stiffness and awkwardness result. In such cases the photographer can but do the best possible with the lines of the figure, such as they are, without attempting gesture of any sort.

It is well understood that relaxation is related to grace in attitudes of repose; but it might be more often recognized that relaxation makes for beauty in action also. There is no paradox Compare the easy stroll of a well-conditioned English gentleman with the parade march of a guardsman. It is merely a matter of the anatomical parts working without strain in the one instance, as against the conscious bracing of muscles and ligaments in the other.

The fine line occurs when the action is shared to a slight degree all along the movable parts of the body instead of occurring violently at one part only. This is the secret of fine posing.—F. C. TILNEY in Professional Photographer.

Fourteen Points for Posing and Lighting

- 1. Long face-Raise camera, make three-quarter view of face.
- 2. Pug nose-Raise camera, lower subject's
- 3. Large eyes-Three-quarter view of face, looking down a trifle.
- 4. Long neck-High collar, raise camera, lower head, pull up shirt front.

 5. Bald head—Screen top of head with black
- head screen.
- 6. Deep eyes—Plenty of light under eyes from sidelight, lower camera.
- 7. Large ears—Rembrandt effect, three-quarter view of face.
- 8. Old people-Seat well away from light, using rather more sidelight.

 9. High cheek bones—Front broadlight.
- 10. Hands—Usually posed edgeways toward camera.

11. Babies-Lower camera, plenty of top, frontlight.

12. Hollow cheeks—Front sidelight.
13. Full figures and groups—Mostly from top-

14. Three-quarter view-Keep lower part of

subject in shadow.

Where reference is made to the raising or lowering the camera it means to raise or lower it above or below the subject's head, which is considered to be the normal position for the camera.-P. and A. Photographer.

The Showcase Tells

THE showcase tells something to everyone who passes it and looks at it, whether he is a customer or tradesman or salesman. It talks all of the time and it is saying things about you behind your back. It is a veritable old gossip, and it can say mean things as well as nice things, and, like any other free talker, it can treat you well or very, very badly. It will come pretty near treating you as well as you treat it, and in this it is quite human. It will lie for you, too, and this is another human trait that should not be overlooked, though generally it tells the truth and it speaks right out in meetin'.

The customers are most frequently the listeners at the case, and they believe what they hear, too, so it behooves you to keep on the good side of your case, in order that it may speak favorably to the people that you desire most to impress favorably. You may be ever so nice a fellow and ever so clever a workman, but if you spurn the old gossip, just remember the quotation from the immortal William: "Hell hath no fury like a woman scorned." She will lie like a trooper and will blast your reputation from one end of the town to the other, even going to the extremity of shooing customers out of your doorway.

But when courteously treated she is quite a different somebody. She is quite vain, and likes to be dressed up (another feminine characteristic). You may be quite an ordinary workman, but if you dress the case up in a manner that satisfies her taste and peculiar style, she will make, or try to make, every one with whom she can come within reach believe that you are the finest ever-bar none. If you are really all to the good in heart as well as in ability, she will be a friend, staunch and true. She will stick to you through thick and thin, and she will make it her business that others will speak well of you.

To the tradesman she will tell of your standing in the business community, and to the salesman she will exert quite an influence for good. There is something else to business besides selling, and that is credit standing with other merchants. The case will tell them whether you are worthy to be classed among the hustlers or among the slackers; among that class that is making headway or that is falling behind; one of those promising fellows that it is worth while to tie to, or one of the drifters that it is wise to shy off

It seems to me that it is a very foxy plan to pay attention to her and do all that is possible to induce her to say nice things about you.—Trade

Good-will

THERE are two things which are the greatest assets in business: Without both of these a man can never build up a large and successful business and with both of them his business is worth twice as much when he comes to sell it. These two things are credit and good-will.

You all know what credit is, but it is almost impossible for anyone to describe good-will. You cannot put your finger upon it, but at the same time it plays a mighty prominent part on

the profit side of your business.

Good-will can only be obtained by carefully building up reputation for fair dealing. dealing with the customers to whom you sell your goods, fair dealing with those from whom you purchase goods. You know how you feel when, because of some delay for which you personally were not responsible, goods are returned to you in place of a check which you were looking for. Then you should know how others feel when you cancel orders or return goods without apparently No matter what you buy or from whom you buy it, orders have been placed for certain goods with the expectation and the understanding that, as they have your order, the goods will be delivered to you when received. Now fair dealing means that you take those goods, otherwise you have lost part of your good-will.

There are times when no doubt you are anxious to cancel an order or return merchandise. Remember that the other man has rights and he has losses to consider just the same as you have.

What we want and what you want to build up in business is permanent good-will and credit. Permanent good-will is worth money to you at any and all times. You can only get this by fair dealing with every person with whom you come in contact. Whether you buy or sell, remember satisfied customers are a part of the good-will of your business. Satisfied dealers and manufacturers from whom you buy your goods are another part of the good-will. Do not do or say anything to a manufacturer or a dealer from whom you buy goods that you would not want said or done to you, and in a short time you will have the good-will of everybody with whom you do business.—Ohio Photo News.

Appearance

THE warm weather is here. Many of our photographers do not realize the value of their personal appearance. It is one of the greatest assets in business. No matter how fine a photographer a person may be or what reputation he may have in his own city as well as surrounding towns, if a new customer comes into the studio and finds him with his collar off, his shirt sleeves rolled up, his appearance is not flattering and they immediately lose all confidence in his ability to make the kind of pictures they want.

We know how it is in many of the studios in warm weather. The photographer thinks more of being comfortable than he does of his business and this is one big mistake. Never mind if it is a warm day, be prepared to meet the customers in your studio the same as you would meet friends in your own home. Be attractive yourself as well as have everything else in your

studio attractive.

This summer there is going to be a large photographic business, larger through the warm months than ever before. You will have more new customers coming into your studio than you ever did in the same length of time before. Your personal appearance decides in many cases whether you have made a permanent customer or one that will go somewhere else when in need of pictures again. It is the repeat customer from whom you can make your profit. Very few of us have made any money from the first sale. - Ohio Photo News.

Training the Retoucher

MUCH valuable time is wasted in having to inspect the work of assistants before it goes to the next department, whereas it ought to be expected of them to be competent enough to pass it along through all departments until final inspection. I advocate the giving of a short allotted time and direct personal attention for a few days as a huge time-saver in the long run, and as an aid to high

quality.

What should be done, what to do for the greatest improved effect with the least possible amount of labor, and how it affects the next department (i. e., the enlarging and "finishing" artist) they lack knowledge of. In some cases masters lack knowledge of art principles and their application. Retouching taught without these, in my opinion, is absolutely valueless. Supposing the method usually adopted in training a pupil for retouching was applied in the dark room or printing-room, disaster would sooner or later happen to a batch of work or soon tell its tale by the work not proving permanent. Naturally the first thing one does in these rooms is to explain the reasons for doing certain things.

Some sort of guidance in theory ought to be in vogue among all photographers—who have the profession at heart—beyond that of the mere making of money. The pupil wants a thorough knowledge of what is required in the branch he is being instructed in. One would not look at the end of a pencil to draw a straight line, otherwise there would be no means to the end in getting that line straight. The mind judges where that line should be to be straight and the brain directs the hand accordingly. It cannot be said that the hand directs the pencil to make the line straight; if the pencil is held correctly the mind draws the straight line. I take this principle as illustrative of my method of instruction for retouching. negative cannot be retouched unless the whole effect required is in one's mind. How to hold the pencil is half the battle. I have noticed that retouchers who hold their pencils at right angles to the negatives and the forefinger tightly in the shape of a triangle are usually bad workers and

their stipple is wormlike and has no symmetry. This is caused by their being unable in this manner to work the fingers freely, the guidance having to be done by the arm and wrist, making

the arm an eccentric.

The correct style, and one which saves hours of labor for the finishing artist, is to hold the pencil very loosely between the thumb and first two fingers, and almost perpendicular, thus using the side of the pencil point and obtaining any desired angle of movement above the wrist by the fingers (the little finger resting on the negative). Never mind how you get a stipple so long as you work to follow the lines of the muscles of face and texture of the skin of the sitter, not to smother the negatives. Many so-called expert retouchers (stipplers) place a beautiful sheen of lead all over the face, whether it be old man, lady, or child; in reality, a lead wash, such as a painter employs as a ground-tint. It is an absolute waste of time, and the effect mechanical, causing many a master to employ two retouchers where one would suffice, and giving an effect which is artistically and commercially valueless. Aim at altering defects only and improving the artistic value by the following course: Select your pupil and give half an hour's personal instruction each day for a week, first getting the pupil to master the taking away of complexion blotches and spots. Aim at nothing else until the pupil can do these to match the surrounding ground without overlapping.

The next step is to instruct where the muscles are exaggerated by the necessary side-lighting of the studio. With a satisfactory stroke there should be no so-called stipple. Then get your pupil to look at the whole of the face and imagine the negative as a line drawing in the positive sense, considering exactly what lines would be drawn to represent the character of the person (dismiss the half-tones for the moment). Get the pupil into the habit of bearing in mind the curve of the main lines that represent the character, such as the shape of the nose, main lines of lips and eyes. Any small complementary shadows there are to these do not need retouching. The next to consider is the relation of the strong high-lights to the imaginary line drawing, and in doing this treat all the half-tone lights as that of a thin wash of paint an artist would put over his drawing. They need no altering, only blending into the main lines (i. e., massed shadows.) The direct alteration of any half-tone or massed shadow representing the line of the facial muscle is fatal in retouching. These are the chief points to consider for artistic retouching. Any other work such as squaring noses and altering nose shadows are not necessary, if the face is properly lighted. All that is needed is the minimum work and the maximum result, which is only obtained by keeping the whole face in mind all the time. Try this method on your next pupil as against the old style of practice—practice without aim and you will be surprised at the result and time saved.—B. J.



Photographic Developers

A SOMEWHAT interesting pamphlet has just been issued by the Government Printing Office at Washington, titled "Chemicals and Allied Products used in the United States, etc.," which details the quantities, values and countries of origin during the fiscal year 1913-14 and this

can be bought for twenty-five cents and is quite an imposing pamphlet of 195 pages.

Glancing through this I found an item of photographic developers and have analyzed the figures, which are rather interesting. In all 214,238 pounds of developers were imported, of the value of \$198,972, and apportioning the percentage of the total to the various countries we obtain the following interesting little table:

Country.	Country.							Per cent. of production.		
Germany									89	
Netherlan	ds								6	
France									4	
England									1	
Russia									1	

And then some kick at the increased cost of developers.

It is stated that the total value of photographic chemicals manufactured on this side for the same period was \$120,690. Whether this last item includes developers only is not apparent from the statistics.

Naturally there are many chemicals used in photography, such as silver nitrate, the bromides, sulphites and soda salts, which are not included presumably in the above. Bull. Foreign and Domestic Science, No. 82.

Dark-room Tips

MR. JOBLING gave recently a lecture before the R. P. S. which was filled with practical tips for work in the dark-room, some of which were not new and others of doubtful value on this side of the Atlantic, where the average amateur does but little practical work.

His first suggestion was that the height of the working bench should be approximately 3 feet 4 inches, and that paraffin wax should be ironed into it with a hot iron.

Boiled water stored in bottles in the dark-room will acquire the temperature of the room and be thus handy for making up solutions.

A 50 per cent. solution of hypo is convenient, as it can be diluted to any strength for plates or papers, and to make this a bottle holding 40 ounces should be marked on the outside at the level of the water; then, if 10½ ounces are poured away and enough hypo added to bring the water to the scratch, one has a 50 per cent. solution.

—Phot. Journ., 1919, p. 109.

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British Photographic Research Association

UNDER this title an association has been formed by practically all the leading photographic manufacturers to carry out research in photography, photo-chemistry and other related subjects, with a view to the general increase of knowledge of these subjects. improving methods of manufacturing photographic materials, and discovering new photographic processes.

Some of the subjects for pure research are the fundamental properties of silver halides and the effects of various substances on these properties, the physical and chemical properties of gelatin and similar colloids, photo-chemical reactions, colloidal chemistry, theory of processes of color photography. The applied research subjects are desensitizing and reducing agents on sensitive materials. The properties of various gelatins with ultimate standardization, paper and card-board, color photography, apparatus and material. Dr. R. E. Slade, F. I. C., is the director of research, and the council includes the most

prominent men in manufacturing circles.

This is an excellent scheme and should be of great value, and as the results are to be, as far as possible, tested out in factories and published, we ought to obtain some very valuable data.

Presumably one may look upon this scheme

as somewhat on the same lines as the Kodak Research Laboratory at Rochester, but run by two dozen firms.

Standardization of Small Cameras

THE British Photographic Manufacturers' Association has decided to standardize small-size plate cameras, and have adopted the following

sizes: $4\frac{1}{2} \times 6$ cm, $6\frac{1}{2} \times 9$ cm, 8×12 cm, 10×15 cm. It is hoped that by the introduction of these sizes, in place of the horde of irregular sizes now in existence, to eventually obtain some uniformity.—B. J., 1919, p. 320.

(It is to be hoped that this scheme will work, and it appears to me to be a promising sign that the metric system has been adopted. It must be recognized that this movement is not to deprive those with existing cameras of possible plates or films, but merely to try and reduce in numbers and to something like uniformity all sizes. What it will mean for us Britishers to give up our much-beloved quarter plate (3½ x 4½ inches, and the still more general half plate (4½ x 6¾ inches), cannot be estimated. Though it should be pointed out that the half plate is a misnomer, because it is not the half of a whole plate, which is 61 x 81 inches; whereas the quarter plate is a true quarter. Personally, as a strong believer and user in the metric system, even a slight wave like this looks good, and anyway it would do away with the utterly inartistic and absurd 4 x 5, which is essentially American. –E. J. W.)



The National Convention

THE National Convention of the P. A. of A. will be held at Cedar Point, Ohio, July 28th to August 2d. This is the first National Convention in three years and it has the promise of a big success.

Cedar Point is a very popular summer resort, has an excellent bathing beach and ample accommodations for a large number of guests. Its location is central and it is only an overnight ride from New York, Chicago and numerous other cities. There is also a good lake service to Detroit and other points.

It is an ideal place to take an outing, but from the looks of the program it will be much more than an outing. There will be demonstrations, lectures and good exhibits, as well as a generous sprinkling of entertainment of various forms. And there will be ample accommodations for all who can attend.

Plan to combine pleasure and business in a trip to the National this year. You will have a good time and a profitable one.

A Report of the Meeting of the Metropolitan Section of the P. P. S. of N. Y.

THE Metropolitan Section of the Professional Photographers' Society of New York held its first dinner at the Hotel Astor, Saturday evening, May 10, under the new regime. The annual dues of the section were raised from five to twenty-five dollars. The dinner was tendered to Mr. Wm. Shewell Ellis, of Philadelphia, and our guest for the evening was Mr. L. B. Jones, of the Eastman Kodak Company. We also had the pleasure of having with us at the dinner the members of the State Board who were holding a special meeting in the city in the interests of the coming convention, which is to meet here the first week in February, 1920.

first week in February, 1920.

Mr. Hoyt, the chairman, greeted the members cordially and thanked them for their evidence of their whole support in the reconstruction of our society.

He spoke of a new era opening up to the photographer if the photographer was only wideawake to the possibilities of photography being used in the field of illustrating and advertising, and to make his point clear he introduced Mr.

Ellis, who felt that a great honor had been bestowed upon him and in his happy way told something of his method and the way he went about making pictures that would have an advertising value. He was very gracious in remarks and offered to help any of the members who may desire to call on him.

Mt. Hoyt showed excellent judgment when he invited Mr. Jones to be our guest, and in his introductory remarks he said Mr. Jones would tell us something about Mr. Ellis and how it is that he has been so signally successful in carrying off so many prizes.

off so many prizes.

Mr. Jones gave a splendid talk and made a strong point—that the photographer should get busy and reach out for orders along the line of advertising. He found fault with the photographer in permitting this kind of work to get by and also in not placing a high enough value on

his pictures.

To emphasize this point he read excerpts from a number of publishers who were willing to buy and pay for the right kind of pictures. Mr. Core, in behalf of the members, thanked

Mr. Core, in behalf of the members, thanked the speakers for their timely talks, and said that he too felt it would be a shame if the photographers do not take advantage of this new field

of work that is opening up to them.

The dinner was a great success. A fine spirit prevailed among the men and it was a delight to look up and down the festive board where a large body of men had gathered in an environment of refinement and excellent taste, not merely to feast, but for a serious purpose, to make their profession and association something worth while.

L. L. DE ANQUINOS, Secretary.

"Photographing Birds by Electricity"

THE May Scribners contains an interesting illustrated article on "Photographing Birds by Electricity" by J. Alden Loring. The author says:

says:
 "Some years ago I devised an electrical attachment for a camera-shutter by means of which I could take a photograph from a position as far away from the camera as two hundred feet, the distance depending entirely upon the number of batteries and the length of wire used.

The camera is first focussed on the nest on

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perch upon which the bird is expected to light, the wires are carried back some distance—to a place of concealment, if the subject proves to be a timid one—and when the bird is in position the photograph is taken by simply pressing the electric button.

Beside the camera, batteries, wires, and push-button, the rest of my outfit consists of "dummy" cameras, one of which is placed near a nest or a perch and from day to day is moved nearer and nearer, until the birds have lost their fear: then the real camera is substituted.

Meal-worms, suet, grain and seeds of various kinds, cherries and strawberries, serve as food to decoy other species within photographing

distance.

To photograph a bird the size of an English sparrow, my camera—3½ x 4½ Premo film-pack—is seldom more than two and a half feet from the subject. At so short a distance the depth of focus is not more than half an inch. The subject therefore must light within that half-inch; otherwise it will be out of focus and the photograph will be indistinct and will lack detail."

Death of Clayton Henry Overton

CLAYTON HENRY OVERTON, aged sixty-three years, one of the oldest and best-known photographers in Philadelphia, died on May 5, at the Frankford Hospital. He had been ill eight weeks.

Mr. Overton was born July 24, 1855, at Tyrone, N. Y. He came to Philadelphia in 1890 and was operator at the Gilbert Studio until 1910, when he left to become a member of the firm of Overton & Young. This firm dissolved after a few years, and he became operator for the Evans Studio. About six years ago he founded the Photo-Crafters, and the business became quite successful. A year ago he retired and purchased a farm at Perkiomenville, Pa., but the change in vocation affected his health, resulting in his final illness. He leaves a wife and two adult children.

Missouri Valley Photographers' Association

The officers of the Missouri Valley Photographers' Association are making plans for the greatest gathering of photographers which has ever been held in the Middle or Western States.

The meeting place, Hotel Baltimore, is a place to be coveted by any association. The program will contain the best of talent along the many

lines of need to the photographer.

The war is over and the high tension is removed, leaving plenty of coin in the hands of the photographers. Let all the boys gather at Kansas City, July 7, 8, 9, 10.

C. J. Fennel, Secretary.

Bromide Paper in X-ray Work

A CONTRIBUTOR to the *Photo Revue*, M. F. Javaugues, describing himself as a military radiographer, states that, on account of the greatly increased cost of plates, tests have been made of the possibility of using the ordinary bromide papers in x-ray work, and that very good results are being obtained by direct exposure to

the x-rays. It is stated that with plates and papers bearing emulsion of the same rapidity, papers require an exposure of from one-third to one-quarter in order to yield a strong negative image by reflected light. The Lumière C. paper regularly used by the French Public Health Department, requires fifteen times the exposure of the Lumière C. plates, but by means of the new Caplain screen this time of exposure can be reduced to one-twentieth. In the case of the Lumière C. R., L. R., and E. R., rapid bromide papers are supplied for enlarging, excellent results have been obtained with exposures approximately the same as those for x-ray plates. Good results have also been obtained with Mazo paper at exposures of about half a second. The foregoing papers have not been found suitable for the making of positive prints from the negatives obtained on them, but with the negative paper of Guilleminot either positive or negative prints can be made with exposures about one-third those of the Lumière x-ray plates or x-ray negatives produced at about the same exposure. From such negatives positive prints may be taken or the negatives themselves examined by transmitted light. It is found practicable, according to the character of the emulsion and the time of exposure, to obtain hardness or softness in the results, and at the same time a rendering of detail and range of tones which, while not equal to the results on plates, are sufficient in a large majority of cases.

Aërial Photography

The first issue of Aërial Photography, the official publication of the United States Army Aërial Photographers' Association, has made its appearance. The organization was perfected by members of the Aërial Photographic School Detachment at Rochester, and "the object shall be to perpetuate the good fellowships and friendships that the service has generated and to prevent their being broken up by the reëntrance of the members into civil life. Only by such an organization can the spirit and memory of the service be kept alive. And the object shall further be to promote interest in aërial photography as a profession and as a science—and to publish a periodical to further the above mentioned objects."

The association has the sanction of "Washton," which is glandly giving it all possible backing and assistance. Material and funds permitting the publication of Aërial Photography will be continued monthly and will be mailed to members only. There is to be an annual meeting and the coming one, which probably will be held in August, is scheduled for Rochester.

The officers of the association are: President, Henry Van Arsdale, Jr., New York City. Vice-Presidents, Fred H. Commander, Rochester, N. Y.; Lloyd Norris, Baltimore, Md.; Louis Strauss, St. Louis, Mo. Secretary-Treasurer, Carl H. Kattelmann, Washington, D. C. Assistant Secretary-Treasurer, Wickham Harter, Trenton, N. J. Board of Governors, Phil. E. Griesemer, DuBois, Pa.; Charles F. Mazdon, Elkins Park, Pa.

All members of the Photographic Section of

the Division of Military Aëronautics are eligible for regular membership, and all persons interested in aerial photography may become associate members. Dues are \$2 per annum.

For membership cards and further information address Carl H. Kattelmann, Secretary-Treasurer, 617 H Street, N. W., Washington, D. C.

Golden Anniversary Meeting of the P. A. of A. 1869-1919

It is just fifty years ago since a few progressive photographers under the leadership of Edward L. Wilson, of Wilson's Magazine, and Abraham Bogardus held the first annual convention of the N. P. A., or National Photog-

raphers' Association.

This association held conventions until 1876, and then seems to have gradually expired without ever being dissolved. For three years there were no meetings at all and then in 1879, at Chicago, the present association was organized and the first convention of the new series held in Chicago in 1880. Each year since then with the exception of 1892, an annual convention has been held until the Great War took up all our energies and we found it necessary to discontinue the meetings for 1917 and 1918.

So we come this year to an unusual celebra-

tion, the fiftieth anniversary of the first convention of professional photographers ever held in this country or any other country—our Golden Anniversary Meeting.

This is a most interesting historical fact, and it is only one more reason why the forthcoming National Meeting of the P. A. of A. should hold greater interest for us all than any previous

meeting or convention.
The Golden Anniversary Meeting at Cedar Point, Ohio, July 28, August 2, falls in the banner week of the year. The days are long, it is not yet too hot, the waters of Lake Erie are at their best, and we will have had a busy season and be ready for a brief vacation, which we will not even allow to interfere with our regular vacation, if we are wise, but just consider it as one of the duties we owe ourselves and our business—a business investment—not a vacation expense.

Lecture on Two-color Photography

THAT moving pictures have only touched the edge of the possibilities before them was demonstrated by the amazing results of two-color photography exhibited by Frederick Ives, inventor, of Philadelphia, before the American Philosophia Society recently.

sophical Society recently.

With almost neglible exceptions, every color in nature was thrown on the screen from plates taken by the new process. The ordinary moving picture in black and white is scientifically of a one-color process. Three colors would get everything nature has to offer, but that is so difficult that nobody has attempted a movie by the process. The combination used by Mr. Ives, in his two-color process, is peacock blue and a double-tone red. The latter is yellow in light shades, orange in the middle shades and

red in the deep shadows.

"Two colors have some limitations," the lecturer said, "but by this process we can per-

fectly get green foliage, blue skies, red flowers and yellow fruit.

"Other processes get yellow flowers, white or red. His process eliminates the two colors nearest the white and black; that is, lemon yel-

low and indigo blue, respectively." The inventor stated that his purpose was to get some simple and cheap process by which

the amateur photographer could capture the beauties of nature. "The new two-color probeauties of nature. "The new two-color pro-cess," he declared, "had been demonstrated to be so simple that it is bound to become popular not only with individuals, but for public moving pictures."

Prints made in a wringer with all the richness of photographs by other processes were shown to illustrate the work of another invention in pho-

tography by Mr. Ives.

The lecturer, a resident of Philadelphia, has received signal recognition throughout the world for his genius in color and photography. The Rumford medal, the highest given for work in light and heat, was awarded him by the American Society of Science and Art. He holds the Progress medal of the Royal Photographers' Society, England, and the special gold medal of the Photographers' Society of Philadelphia.

The London Salon, 1919

THE London Salon of 1919 is announced to be held at the Gallery of the Royal Society of Painters in Water Colors, 5a Pall Mall East, London, S.W., from September 13 to October 11. The latest date for the receiving of exhibits has been fixed for September 2, and it is particularly desired that prints submitted by photographers overseas should be sent so as to reach the Secretary of the Salon in advance of that date. prospectus and entry forms can be obtained from the Secretary of the Salon, addressed as above.

The Tenth Summer Session of the Clarence H. White School

THE tenth summer session of the school will be held from July 7 to August 16, 1919, at Canaan, Connecticut. The summer session is intended to give the student the advantage of practical instruction with a profitable and pleas-ant summer outing. The session of 1919 being the tenth anniversary of the establishing of the summer class, great effort is being made to make it the most interesting and profitable yet held.

The David Stern Catalogue

THE David Stern Company, Chicago, Ill., has just issued their July-1919-August 60-day sale by mail. This booklet is full of exceptional values in both new and used goods; also contains one or two added lines which are of interest to every camera owner. It would well be worth your while to send for a copy.

Chicago Camera Club Exhibition

THAT there is more than one way of taking a picture is clearly demonstrated in the sixteenth exhibition of the Chicago Camera Club at the Art Institute, which had its official opening on May 15.

This is only the second time, with the excep-

tion of a long forgotten incident, when the club had been invited to hang its photographs within the sacred portals. It was largely the result of its great popularity last year that brought about the invitation again, it being one of five photographic clubs selected out of thirty-five

The eighty-one photographs hung represented a higher artistic average than ever before, in the opinion of the jury of selection, who were Eugene Hutchinson, Lawrence Kennedy and George Alexander. There were some remarkable examples of craftsmanship in exposure, and interesting experiments with various types of lenses

For bringing out the suggestion of a picture within the picture Gordon Abbott's "The Holiday Spirit" and L. D. Carter's "January Thaw" cling to the memory; his "Consider the tilies" and B. B. Conheim's "Mildred" were good studies of girlhood. So were George High's "Waiting the Mail" and "Meditation."

Mr. High's "Stolen Sweets" rang in the joy-

ous note of childhood and was in a class by itself at this exhibition. R. A. Dunn depicted the sunny time of life in his "The Happiest

Time," and a more sophisticated moment with his "Russian Dancer."

K. A. Kjeldsen caught in his "Springtime" the wistfulness of young womanhood, while the spirit of whimsicality Robert Sansone put into his "Pierot and Pieret," as indeed he should.

The spirit of work was reproduced in all its strength in J. G. Sarvent's "The Wind-up," and in C. N. Bowen's imaginative "David and Goliath." In fact, Bowen's group of six include

some of the best work in the collection.

The Camera Club has recently gone into larger rooms at 31 W. Lake St. A comprehensive course of lectures and demonstrations has been planned for next winter, and it is hoped that our Chicago camera men will soon find themselves the acknowledged rivals of the Pittsburg Salon, now standing at the head of camera clubs in America.

The Photographic Guild of Baltimore

THE fourth annual exhibition under the auspices of the Photographic Guild of Baltimore was hung at the Peabody Gallery, in that city, May 18 to June 1, inclusive. The exhibition was pronounced superior in every way to former showings of the Guild in spite of the difficulties experienced by pictorialists ever since the war in obtaining the best material, much of which comes from abroad.

In addition to the local work there was an invited set of twelve prints by Wilbur H.

Porterfield.

Through the invited prints, which are hung with the Guild portfolio each year, the salons will, in a sense, be brought to Baltimore and give local art lovers an opportunity to see what is being done photographically. The Guild hopes through its exhibitions to suggest the delicacy and responsiveness of the process as a medium of artistic expression, and so influence favorably the vast number of persons artistically inclined who have never heretofore considered it seriously.

Prints were hung in groups according to workers, and with the bronzes left remaining in the gallery the general effect was most pleasing. Out of a total of eighty prints there were fortythree carbons, which showed this medium a big favorite. Next came platinum with sixteen examples; six gummed bromides and fifteen bromides. Individual examples showed considerable individuality and very clever execution.

Contributing members of the Guild are, Emily Hayden, Fred Frittita, whose work won well warranted praise at the recent Pittsburg Salon, Harold Harvey, John Stocksdale, Houson Payne, and Remick Neeson.

General Electric Company Acquires Control of Cooper Hewitt Electric Company

THE General Electric Company, by the acquisition of all the common stock of the Cooper Hewitt Electric Company, has secured control

of the latter company

The Cooper Hewitt Electric Company for the past sixteen years has built up a very extensive business in industrial and photographic lighting among all the large industrial manufacturers, motion-picture studios, photographers and photographic laboratories.

The company will be operated under the regulation and management of the General Electric Company, and the following directors assumed office on June 3:

C. E. Patterson, comptroller, General Electric

Company, New York City.
C. W. Stone, General Electric Company,
Schenectady, N. Y.
N. R. Birge, General Electric Company,
Schenectady, N. Y.
C. C. Ochorge Edicar Lawrence

G. C. Osborne, Edison Lamp Works of the General Electric Co., Harrison, N. J. W. R. Burrows, Edison Lamp Works of the General Electric Co., Harrison, N. J.

L. P. Sawyer, National Lamp Works of the General Electric Co., Cleveland, O.

W. H. Roberts, National Lamp Works of the General Electric Co., Cleveland, O. Grosvenor Calkins, Attorney, Boston, Mass.

W. A. D. Evans, Cooper Hewitt Electric Company, Hoboken, N. J.
Mr. W. A. D. Evans, who has been connected with the Cooper Hewitt Electric Company since its inception, will be in actual charge of the company as President and Treasurer. Mr. N. R. Birge will be vice-president; Mr. C. P. Hamilton, assistant treasurer; Mr. E. E. Davies, secretary and auditor.

The present policy of the company in its field of industrial and photographic lighting will be continued. Increased facilities will shortly be provided to take care of the rapidly increasing

business.

College of the City of New York. Summer Ses-Courses in Photography sion, 1919.

Course I: Elementary. This course is prepared especially for the amateur. It will enable him to produce better pictures and attain more artistic results with a great deal less effort and financial outlay. The course is thoroughly practical.



Laboratory, Field and Class Work. Tuesday 7.30 to 9.18 P.M., and Saturday afternoon—eight weeks. Beginning July 1. Fee \$5.00. COURSE II: ADVANCED. Prerequisite: Course

I or its equivalent. A practical training in the more advanced phases of photography-such as portraiture, commercial and scientific photography, including the general principles of radiography, microphotography and composition.

Laboratory, Field and Class Work. Thursday 7.30 to 9.18 P.M., and Saturday afternoon—eight weeks. Beginning July 3. Fee, \$5.00.
Registration in room 226 Main Bldg. Paul

Klapper, Ph.d., Director.

City College, 138th Street, Convent Avenue.

Mr. Frank Wilmot Goes with the Haloid Company

MR. FRANK WILMOT, president and general manager of the Defender Photo Supply Co. for over twenty-three years, and which firm he



MR. FRANK WILMOT

founded, has affiliated himself as vice-president with the Haloid Company, of this city. Wilmot is one of the best-known and bestliked figures in photographic circles today. He

served his apprenticeship with the Eastman Kodak Company in the early stages of development of that company and in the days when film manufacturing was in its infancy. He was the founder of the Defender Company, which started in a modest way in what is now the top floor of the C. P. Ford Company's building. Under his guidance the business grew and pros-pered. The buildings on the old driving park tract were purchased and remodelled so as to house the rapidly expanding business which Mr.

Wilmot's aggressive methods created.

The Haloid Company, of which Mr. Wilmot has recently been elected vice-president, is one of the younger of the photographic industries, confining itself to the production of high-grade photo papers, specializing on fine portrait grades. It occupies a modern, up-to-date plant adjoining the New York Central lines at Otis station and has rapidly forged to the front in the last three years, being the largest exclusive manufacturer of photo papers in this country. Simultaneous with Mr. Wilmot's affiliation comes the news of an extensive expansion in the policy of the Haloid Company, production capacity having recently been doubled. Other officers of the Haloid Company are: Mr. G. E. Mosher, president; Mr. J. M. Walnsley and Mr. E. C. Yauck, vice-presidents; Mr. J. R. Wilson, secretary and treasurer.

Board Meeting of the Middle Atlantic States Association

THE officers of the Photographers' Association of the Middle Atlantic States met in Atlantic City, N. J., on June 5 and 6, and perfected arrangements for the 1920 Convention to be held in the Casino and Casino Hall, on the famous Steel Pier, February 17 to 20, inclusive.

President Schriever deserves much credit for signing the contract and securing these quarters for housing the 1920 Convention. The Casino, which will be used for the manufacturers and the display of pictures, contains about 15,000 square feet of floor space; Casino Hall has a large stage, beautifully lighted and is admirable for meetings and demonstrations, with a seating capacity of The acoustic properties are perfect.

The dates, February 17 to 20, were selected in order to secure the Steel Pier for the Convention, as this is the first time these halls have ever been rented for this purpose, and the time is one week in advance of the regular opening of the pier for the season.

President Schriever has a new scheme for the picture exhibit, and this will be announced as soon as completed. It is novel and will surpass his efforts in this line of some six years ago.
Rall Javens, of A. M. Collins Mfg. Co., Phila-

delphia, was appointed Chairman of the Entertainment Committee, and Miss E. Hoefle, of Atlantic City, Chairman of the Ladies' Entertainment Committee.

The following were present: President and Mrs. J. B. Schriever; J. W. Scott, Vice-President; Geo. J. Kossuth, Secretary; Wm. I. Goldman, Treasurer; N. Levinson, State Vice-President, Maryland; Will H. Towles, State Vice-President, District of Columbia; Paul True, Ansco Co.; J. K. Harriman, A. M. Collins Mfg. Co.; G. Dobkin, Atlantic City; E. Goldensky, A. E. Lipp, Geo. W. Berry; Albert Wunderlich, of John Haworth Co.; Bob McConaghy, of Bridges Mfg. Co.; Clint Shaffer and C. O. Towles, Hammer Dry Plate Co.; R. J. Graves, J. Sussman Photo Supply Co.

Army Seeks Aërial Photographers

CAMPAIGN for the recruiting of aërial photographers has been begun by the War Department. Many inducements are offered to recruits and the chances of advancement in the service are excellent, and flying pay is offered to those whose duties require frequent and regular flights. After one year of service, unmarried soldiers under thirty years of age are eligible to the grade of Provisional Second Lieutenant. Enlistments are for one or three years. Information can be obtained from any recruiting office, or from the office of the Director of Air Service, U. S. A., Photographic Branch, Washington, D. C.

Fourteenth Annual Exhibition of Photographs, March 1 to 13, 1920, John Wanamaker, Philadelphia

THE fourteenth annual exhibition of photographs, to be held March 1, 1920, in Philadelphia. Entries close Saturday, February 7, 1920.

The judges will decide the merit of each picture as they would in an exhibition of paintings or sculptures, and will have authority to hang only those pictures that are worthy, omitting all others.

Eighteen prizes will be awarded, and as many "special mentions" as may please the judges. First prize, \$100; second prize, \$50; third prize, \$25; five prizes, \$10 each, \$50: ten prizes, \$5 each, \$50. In case of several pictures being of nearly equal merit the judges may combine the prizes and divide them in different proportions, according to their judgment of the relative merits of the pictures.

For further information, inquire

For further information, inquire Рнотобрарніс Ехнівітіом Викели, Main Floor, Chestnut and Juniper Sts., John Wanamaker, Philadelphia.

The Camera Club of New York Competition

THE Camera Club of New York announces a very attractive competition, open to the public, for the best pictures of the St. Joan of Arc Statue, located in Joan of Arc Park, at Ninetythird Street and Riverside Drive. The honors are worth striving for by professionals as well as amateurs.

The pictures will be judged by a competent jury, and it will be very interesting to see whether the greater honors go to the amateurs or to the professionals.

Aside from the attractive prizes, the competition should arouse a flood of interest in a subject that looms very big in history and romance, and it will be time pleasurably spent to brush up renewed acquaintance with some of the many stories centered about the Maid of Orleans

The Joan of Arc Statue Committee, George F. Kunz, President, through the Camera Club of New York, offers in cash, or such equivalent as the winners may decide, \$30, for first prize, \$20 for second, \$15 for third, and \$10 for fourth prize—the winning prints to become the property of The Joan of Arc Statue Committee, with right to reproduce, giving the photographer full credit.

All prints submitted will be publicly shown and judged at the Camera Club rooms, during October, 1919.

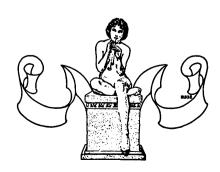
Prints must be mounted, and have the name and address of the photographer plainly written on the back of each mount, and delivered on or before September 30, 1919, to

THE JOAN OF ARC STATUE COMMITTEE, The Camera Club, 121 W. Sixty-eighth St., New York.

Charles I. Berg, William D. Murphy, William E. Wilmerding, Committee.

The Portland Camera Club

The Portland Camera Club, Photographic Section, Portland Society of Art, elected the following officers at their Annual Meeting on May 5: Francis O. Libby, President; Roger P. Jordan, Vice-President; William T. Starr, Secy.-Treas.; George MacDonald, Print Director; Harold Ayer, Lantern Slide Director.





The WORKROOM

ONTAINING THE LATEST PROCESSES, FORMULAE AND APPLIANCES NEEDFUL IN THE ART OF PHOTOGRAPHY FOR THE OPERATOR & WORKER

Paramidophenolhydrochloride (Kodelon) versus Monomethylparamidophenolsulphate (Metol) Mixing Chemicals Sensitized Canvas for Oil-painted Enlargements Hot Weather Liver Toning Rapid Plates and Density Carbon Printing and Fumes A Bichromate-mercury Intensifier Organic Intensifiers The Density of Negative Fog Milky Fixing Bath Drying Marks Glass for the Studio Defects in Sketch Portraits New Methods of Producing Tricolor Prints Transferred Bromides Photographic Materials and Processes Photosensitizing Dyes



THE WORKROOM

By the Head Operator



Paramidophenolhydrochloride (Kodelon) versus Monomethylparamidophenolsulphate (Metol)

THE use of metol as a developing agent, especially in combination with hydroquinone, gained rapidly in favor in the photographic world, principally through the introduction of the so-called gaslight developing papers. Owing to metol being an article of German manufacture its supply fell off rapidly soon after the World War started, and eventually its supply ceased entirely. The demand for this chemical became so great, because of its use in the moving-picture business, and its manufacture having been kept a secret by the German manufacturers

A developing agent that would rival metol was eagerly sought. The manufacture of paramidophenol sulphate was commenced in the United States. under another name. This United States, under another name. This developing agent was a close rival of metol, but the use of caustic soda was necessary to secure the full developing power of this chemical. The results, however, were excellent when used in combination with hydroquinone. To keep up its full developing quality a small quantity of caustic soda solution was added occasionally. Although this addition aided the developing, and prolonged its action, the effect of the caustic soda upon the fingers of the person doing the developing was a serious matter, as it caused cracking of the skin and produced painful sores that were not readily healed. The use of this developer necessitated the adoption of rubber finger-stalls or gloves, even when used upon a small scale, although the use of these finger-protectors is necessary when any other developer is used for the development of a large number of prints varying from 200 to 1000 sheets of paper 8 x 10 to 20 x 24.

Paramidophenolhydrochloride was first used by the writer in 1906 as a developer, side by side with metol-the only difference that could be

observed was in the color of the resulting prints.

The metol produced prints of a blue-black color, while the paramidophenolhydrochloride gave prints of a brown-black. In both developers the use of hydroquinone was indispensable. When plates were developed with the paramidophenolhydrochloride mixture a superior negative of printing quality was the result. The blue tint in the negatives produced by metol was deceptive, the intensity was not of the depth that it appeared to be, and conse-quently a hard printing quality of paper was required.

The name kodelon, which appears to have been coined by the Eastman Kodak Company, is a name as acceptable as metol. Compounded apparently from kodak and elon, it is more easily spoken than paramidophenolhydrochloride and more easily remembered, in the same way as metol is used to represent monomethylparamidophenolsulphate.

The kodelon developer when used upon a large scale has proved to be superior to metol, inasmuch as its keeping qualities when a large surface was exposed to the air did not deteriorate or turn black as the metol did after being exposed all night. The quantity exposed to atmospheric oxidation was about five gallons. By the addition of about 50 per cent. of more developer the process of developing was carried on as usual with sheets of paper 10 x 16, of various makes, including both rough buff and smooth buff, the color of the *freshly* developed prints being always of a brown black. After passing through the hardener acid bath, fixing and washing, the color resulted in a set black which always procolor resulted in a jet black, which always produced excellent sepia prints when treated with

the hot alum-hypo bath. Some important tests have been made as to the lasting qualities of kodelon and metol developer, both being made up in like proportions and as many 4 x 5 prints developed as each would withstand until the quality and color of the prints deteriorated. The kodelon developer had the advantage, yielding nine more prints before deterioration commenced. The only difference being in the color of the prints by the two developers. Oxidation of the metol developer appeared to set in more rapidly than with kodelon. The developing of exposed plates for negative making by the usual developers made of paramidophenolhydrochloride and hydroquinone is also capable of yielding good results. The printing quality of such negatives, however, is not equal to negatives developed with pyrogallic acid. This difference in printing quality is distinctly visible in both carbon and platinum prints, as well as developed paper prints. A special developer, however, may be prepared from the above chemicals that will produce negatives of the same printing quality and color as pyrogallic acid, which the writer has found in practice to be very satisfactory, the detail in the shadows being well rendered, and the high-lights brilliant without being hard and contrasty—in fact, a well-balanced negative. The solution being contained in two bottles only enables the developer to be made in any quantity at any time. The following formula has produced excellent results in the writer's practice and may prove advantageous to others who desire to secure the same results as obtained with pyrogallic acid, without staining the fingers to a chestnut brown as is so often the case when pyro developer is used.

4 drams

4 drams

8 fl. oz.

Stock	S	olut	ion	\boldsymbol{A}	•
Grain alcohol					7 fl. oz.
Paramidophenol	hye	dro	chle	or-	
ide (kodelon)					10 gr.
Hydroquinone					70 gr.
Tartaric acid					40 gr.
Glycerin					1 fl. oz.
Sodium sulphite	(d	ry)			30 gr.
Stock	s S	olut	ion	В	
Distilled or rain	wa	ter			8 fl. oz.
Potassium brom	ide		•		5 gr.
Sodium carbona			·)		2 oz. (av.)
The developing sol	uti	o n i	is n	nad	e up as follows:

Stock solution A.

Stock solution B.

Water

Add the A solution to the water, then add B. Thorough mixing is easily accomplished by pouring the mixture into a clean tray, then returning it to the graduate. Now place the exposed plate or plates into the tray, face up, and pour the developing solution over in one clean sweep; rock the tray so as to produce an even flow over the surface; cover the tray with a suitable piece of blackened cardboard, or strawboard so as to prevent any extraneous light from striking the plate during development, removing it only for the time necessary to examine the progress of development. In the course of two or three minutes development will be complete. The plate may now be washed well under the faucet, placed in the fixing box containing the usual chrome alum-hypo fixing solution. As soon as it is thoroughly fixed, examine the negative, when it will be found to be of an exceptional quality and identical in color and quality to a pyro developed negative. Development may be commenced by using only 2 drams of the A solution, when in a short time 2 drams more may be added to complete development. The image does not make its appearance very rapidly, the development may be carried to the same depth as for pyro development.

When metol was used in place of kodelon the results were the same, the only difference being a slight change in the color of the image, otherwise

the printing quality was the same.

When a developer is made with either kodelon or metol the employment of hydroquinone (namely, oxybenzine) is necessary to produce requisite printing density in a negative, or brilliant snappy prints upon developing paper. The same remark applies to the use of paramidophenolsulphate. The writer's tests with this chemical extended over a month, metol being also used for comparison. Now that metol and similar phenol derivatives are being made in the United States the photographic practitioner will be induced to make his choice of some of the most valuable photographic chemicals as developing agents that have been produced in modern times, that will suit nearly every requirement and being made in this country from products that are not dependent upon a foreign country will insure a constant sup-

ply without fear of shortage either at the present time or in the future.

The experience of the writer with paramidophenolhydrochloride extended over eleven months, made by both the Edison and the Eastman companies, for the development of prints from 8 x 10 to 22 x 28 in size upon glossy, matt and sepia buff papers, from 3000 to 5000 weekly, gave a full opportunity of proving what the above chemical could do both in numbers and quality, and proved to be commercially advantageous, as it would be possible to prove by the development of prints upon paper of various kinds and qualities.—Alfred J. Jarman.

Mixing Chemicals

Care in Handling Chemicals

CHEMICALS should be weighed out and the solutions prepared in a separate room, and care should be taken when handling such substances as hydroquinone, resublimed pyro, potassium ferricyanide, etc., not to shake the finer particles into the air, otherwise they will enter the ventilating system and settle out on benches, negatives, and prints, and cause no end of trouble in the way of spots and stains.

Weighing

Weigh out chemicals on pieces of paper and after transferring to the mixing vessel do not shake the paper but drop it into the sink and allow water to flow over it, thus dissolving the duct. Larger quantities are most conveniently weighed out in buckets.

Measuring

For small quantities, a glass graduate should be used; for larger quantities use a bucket previously graduated, or mark off the inside of the tank or crock used for mixing. When measuring a liquid in a glass graduate place the eye on a level with the graduation mark and pour in the liquid until its lower surface coincides with this level. Owing to capillary attraction the liquid in contact with the walls of the graduate is drawn up the sides so that on viewing sideways it appears as if the liquid has two surfaces. All readings should be made from the lower surface and at room temperature, because a warm liquid contracts on cooling.

Dissolving

The rapidity with which a substance dissolves in any solvent depends on its solubility and degree of fineness, the temperature of the solvent, and the rate of stirring. Since a chemical is usually more soluble in hot water than in cold the quickest way of mixing a solution is to powder it up and dissolve in hot water with stirring. In the case of a few substances like common salt, which are only slightly more soluble in hot than in cold water, the use of hot water is of no advantage.

Since most solutions are intended for use at ordinary temperatures, if hot water is used for dissolving, the solution must be cooled off again if it is required for immediate use, though usually the time taken to do this is less than the extra time which would be taken up in dissolving the chemical in cold water. When mixing, therefore, as a general rule dissolve the chemical in as small an amount of hot water as possible, cool off, and dilute with cold water.

After diluting with water, thoroughly shake the solution, if in a bottle, or stir if in a tank, otherwise the water added will simply float on

top of the heavier solution.

When mixing a solution in a tank, never add the dry chemicals to the tank but always make sure that the chemicals are dissolved by mixing separately and filtering into the tank.

In the case of anhydrous (dry) salts, such as desiccated sodium carbonate, sodium sulphite, etc., always add the chemical to the water and not vice versa, otherwise a hard cake will form which will dissolve only with difficulty.

Filtering

The purpose of filtering is to remove suspended matter, such as dirt, caused by the presence of dust in the chemicals used, and also any residue or undissolved particles which might settle on the plates, film or paper during development. There are several methods of removing such particles as follows:

Allow the solution to stand and draw off or decant the clear liquid. This method is particularly useful when the suspended matter is so fine that it will pass through a coarse filter.

Since coarse particles settle quickly the rate of settling of a semi-colloidal sludge can usually be hastened by mixing the solution in hot water, because the heat tends to coagulate the suspension and causes the particles to cluster together. Thus, if crystals of sodium sulphide, which are brown, due to the presence of iron, are dissolved in hot water, the colloidal iron sulphide coagulates and settles out rapidly, leaving a perfectly colorless solution.

Filter the solution through fabric or filter paper. Filtering through paper is usually a slow process and the continual dropping of the solution exposes it to the air, thus causing oxidation. It is usually sufficient to filter through very fine cloth or muslin which has been washed thoroughly, otherwise the sizing matter in the fabric will be washed into the solution and settle out

as a sludge.

Removing Scum

When mixing a chemical solution, especially if the solutions are not filtered, a scum usually rises to the surface consisting of fibers, dust, etc., which should be skimmed off with a towel.

When a fixing bath has been used for some time and is allowed to stand undisturbed for a few days, any sulphuretted hydrogen gas, which may be present in the atmosphere, forms a metallic looking scum of silver sulphide at the surface of the liquid, and on immersing the film this scum attaches itself to the gelatin and prevents the action of the developer. Any such scum should be carefully removed before use with a sheet of blotting paper.—Photo Digest.

Sensitized Canvas for Oil-painted Enlargements

A QUERY that frequently arises among photographers generally, both amateur and professional, particularly those who are anxious to color their work substantially in oil colors, is how to prepare artists' canvas in such a way that it can be printed upon and so afford a base for subsequent painting. While the method is one not to be advocated from the painter's point of view, there is no doubt that for many professional workers the preparation of a photographic image on canvas is likely to prove very useful.

There have been various methods published previously in which canvas has been coated with a gelatino-bromide emulsion, but this has the drawback of being liable to crack when the painting is finished. The following, however, has been stated to be thoroughly effective when properly carried out, and it has the distinct advantage of not containing more than sufficient gelatin to hold the image properly upon the surface. The prepared canvas can be kept for months before applying the silver:

Potassium iodid	le			80 gr.
Ammonium bro				35 gr.
Ammonium chl	orio	de		10 gr.
Gelatin				60 gr.
Albumen .				1 oz.
Distilled water				10 oz.

Mix and gently warm until the gelatin is dissolved; clean the surface of the canvas (if it be prepared for painting in oil) with:

Ammonia $\frac{1}{2}$ oz. Methylated spirit 2 oz.

Apply with a soft cloth until the greasiness has disappeared, and allow to dry thoroughly; then apply the above solution evenly with a clean sponge, and when dry sensitize with:

Silver nitrate .			1 oz
Glacial acetic acid			₹ oz.
Distilled water .			12 oz.

Pour a small pool of this in the middle of the canvas, and spread all over with a pad of cotton-wool, and in about one minute, and while still wet, expose (about one minute is enough for an enlargement of six times) and develop with:

Gallic acid .				60 gr.
Lead acetate				10 gr.
Distilled water		_	_	10 oz.

Filter, and apply in the same manner as the silver solution and with the same piece of cotton-wool, for the little silver it contains will give vigor. When development is complete, the enlargement should be rinsed and fixed in hypo solution (4 ounces to the pint); then thoroughly washed. Fixation and the after-washing can be accomplished by floating the canvas face downward, and there is no need for the canvas to be detached from its stretcher unless it is desirable on account of the possibility of warping.

The image (having only a minimum of gelatin) will not strip or blister; and although it may not be entirely satisfactory as a photographic print, it will be all that is required to serve as a base and guide upon which to paint in oil colors.—

Photography.

Hot Weather

EACH summer there appears a new crop of complaints, or, rather, it is a repetition of the same old complaints that are periodic as the hot weather comes on. Much of this trouble is the result of forgetfulness, for the hot weather troubles are an old pest that has been met many times before but seems to come as a surprise each season to some members of the photographic fraternity

The old-fashioned frill is so well known that every one knows it when he sees it and is prepared to deal with it without making a kick to the manufacturers that they have a bad emulsion. There is something uncanny about the way in which hot weather troubles come. We will have hot days and oppressive, humid days that do not seem to affect plates or paper. Then comes the fatal day when it seems to be very cool and pleasant, but there is something in the atmosphere that brings trouble to the surface, and almost before we know it the foul deed is done. Why it should have waited through two or three hot spells before appearing we cannot

explain, but that is the way trouble comes.

For plates, the safeguard is to have a chrome alum rinsing bath handy. This is made up of one part of chrome alum to sixteen parts of water, with possibly a few drops of acetic acid. After development, rinse in this alum bath before putting into the regular fixing bath. Care should be taken not to leave too long, as the green of the chrome alum may stain the plate. Keeping the developer cool is sometimes a problem, and, where the best of apparatus is not possessed, it must be accomplished by a makeshift. Ice should not be put into the developer, as it changes the strength and will make trouble. To lay the developing tray in a dish of packed ice is good but rather wasteful and expensive. It has been found that a tray of water in which is placed a can of cracked ice will keep the temperature down to about normal and is a very economical method. An empty soda can answers admirably for this purpose. If a fixing tank is used, the temperature can be controlled by filling a can that has a water-tight top and letting this can of ice down into the tank. The bath will be kept cool. but the strength will not be affected.

The same trick may be used with paper developer and paper fixing bath where an even temperature is quite as important as with plates. Paper is not so likely to frill as a plate, but it has its hot weather troubles quite as annoying as plates. We fear to recommend any change in formulæ during the summer, not because it is not a great help for fine work, but unless the workman knows all of the whys and hows of adapting the developer to season he is very apt to get into mischief. The manufacturers of paper and plates frown on a promiscuous changing of developers, for they meet up with some wild and weird mixtures that are concocted by photographers who have been experimenting with their own ideas in developers. The cost of demonstrator service that has been spent on overcoming these voyages out into the unknown of photographic chemistry has convinced the manufacturers that the greatest safety lies in impressing every one to stick severely to the published

Since the war began, there have come into use many metol substitutes, which have required a change of formulæ, and, as a rule, these new developers need more alkali than the old metol. This has brought out a new set of stains that have given quite a bit of trouble. The importance of the rinsing bath has been emphasized as the easiest and most effective corrector of these troubles. There has been a tendency to consider lightly the function of the rinsing bath, and this is a mistake, for it is very important. An excess of alkali in the developer may be carried into the fixing bath to such an extent that it will neutralize the acetic acid in the fixer, which is wrong.

Keep the rinsing bath fresh by using either running water or else by frequently changing the water. A little acetic acid in the rinsing bath will serve as a check and also as a neutralizer for the alkali from the developer. Watch the rinsing

bath, especially in hot weather.

But the fixing bath should be given the closest and most constant attention. When the prints turn yellow or show yellow stains, go after the ixing bath, for it is generally the fellow who is causing the mischief. It should be fresh and kept up to full strength, cool and ready for work. The ice can will render its best service in the paper fixing bath, and it is the one best bet in the hot season. There is altogether too little stirring and handling of prints in the fixing bath for the wel-fare of the trade. Whether it is laziness or ignor-ance of the necessity of keeping prints separated while fixing, we hesitate to say, but we are told by those who are supposed to know that it is a large bit of both. We cannot impress too strongly on the minds of paper workers the necessity of proper fixing of prints.

Sulphurization is the most frequent cause of stain, and in the hypo-alum bath, when used hot, the action is quick and even, and it has become the most popular method of making sepias. But a lukewarm, stained fixing bath wants to get in its sepia work just as a regularly prepared bath for that purpose, and when prints are left in the fixer for a long time, and when that fixing bath is full of an accumulation of foreign chemicals, the sepia effect is hardly the even color that will render

prints popular. In fact, it is nothing but stain.

These are things to watch out for in hot weather. Nothing new about them at all—just calling attention to the same old song of former

years.—Trade News.

Liver Toning

THERE seems to be in some quarters a difficulty in getting satisfactory tones on bromide prints with the ordinary sulphide toning process. Instead of obtaining good rich sepia tones a rusty color is got, due sometimes to a want of density in the negatives, or to overexposure followed by insufficient development, while in other cases no modification in working will give the desired color. To those who find themselves troubled in this way we recommend a trial of liver of sulphur (potassa sulphurata) as a toning This has the advantage of giving a variety of colors, ranging from a warm black to

sepia, including some very fine purple browns. One of its good points is an absence of the slight reducing tendency of the ferricyanide bleacher, and another is that even if the prints are inclined to be weak there is no liability to give a "ginger" color. The process is a simple one; the toning bath consists only of sixty grains of "liver" to a pint of warm water, a few drops of ammonia being added when solution is complete. This should be raised to a temperature of about 100° F., and the print immersed until the desired color is reached. A little allowance must be made for the further toning action, which goes on in the subsequent washing. Some papers will stand the heat of the solution without requring hardening, but if there is any tendency to melt the prints should receive a preliminary bath of formalin, a convenient strength being two ounces to the pint. As with the hypo-alum bath, all papers will not tone to sepia in the liver of sulphur solution, some refusing to go beyond a purple black similar to P. O. P. A few trials with various papers will show the most suitable makes.

Rapid Plates and Density

It is commonly believed that it is difficult to obtain full density when using very rapid plates, and some operators prefer to use a slower grade in order to secure plucky negatives. The idea is fostered by the fact that the films of nearly all fast plates appear much more transparent before development than do those of slower ones, and this gives rise to the belief that such plates are thinly coated and lacking in silver. certainly not the case, the fast plates having in some cases twice as much silver bromide spread over the square inch as the "ordinary" ones. We have used plates which were so transparent that ordinary printing could easily be read through the emulsion, but which gave almost perfect opacity when developed. The fact is that much longer development is necessary for a fast emulsion than for a slow one. If we take two plates of the same make, one an ordinary and the other a "supersensitive," expose both correctly and develop in the same developer for the same length of time, the difference will be most marked, but if the rapid plate be developed twice or even three times as long the densities will then be pretty even. Instead of prolonging the development the same effect may be produced by increasing the amount of alkali, or by raising the temperature of the developer. With regard to the former expedient, a little mishap which recently occurred to us will be instructive. By mistake carbonate of soda was used instead of sulphite in making a stock pyro solution, and by so doing the amount of alkali in the mixed developer was more than doubled. developing for the usual time plates which normally gave thin delicate images became so dense that considerable reduction was necessary before the negatives were printable, a conclusive proof that a full quantity of silver was present.—B. J.

Carbon Printing and Fumes

In some unaccountable way the notion has been created that carbon tissue is extremely

sensitive to various fumes, and many have been deterred from using this charming process because they thought that special precautions had to be taken to avoid "tinting," or what would be called "fog" in other processes. We have recently seen excellent carbon prints, which were produced day after day under conditions which are popularly believed to be impossible. They were made in a workroom in which an evilsmelling dry-mounting press was used almost constantly; by the side of the sink a geyser was used to supply the hot water needed, and three feet away the sulphiding of bromide prints was constantly done. The reason for the immunity from the ill effects of this combination was a simple one; only ready-sensitized tissue was used. In a dry state the fumes had practically no effect upon it, and the short time it was exposed while wet during the mounting did not allow any action either. The great stumbling-block in carbon work is the drying when home-sensitized tissue is used, and practically all risk of "tint may be avoided by drying the tissue in an airtight box or cupboard over chloride of calcium. By so doing, not only is the atmosphere excluded, but the drying is done in the same time whatever the hygroscopic conditions may be outside. Another advantage gained by this method of drying is that the tissue is of uniform sensitiveness, which is not the case when it is dried in the open.—B. J.

A Bichromate-mercury Intensifier

It was while working under active-service conditions that the experiments leading to the discovery of a new method of intensifying negatives was made. Some very brilliant results were required in the way of transparencies, and the only plates in stock of the size wanted were very stale, and though labelled "Process," would not give even ordinary printing density. So the only thing to do was to make the best possible, and then clear and intensify as much as possible. Lead was tried, but owing to the lack of proper washing accommodation, bad water, and also to the strong color it gives to the very slightest trace of veil in the whites, it did not answer in this case. After trying every method that I could to persuade the "quarter-bloke" in charge of the stores to let me have the material without the usual circumlocution, and still not getting enough density, I began to experiment, and eventually found a method of greatly increasing the density without risk of stain provided that the negative was thoroughly fixed.

The procedure finally adopted was to bleach the negative in an acidified solution of potass. bichromate (as for chromium intensification), and then, after washing for a short while, immersing in a mercury-iodide solution, and after a further wash to darken the bleached image in a sulphide bath; or else in a hydroquinone developer if there were any likelihood of subsequent reducing

being called for.

I found that a lot of washing, after fixing the plate, between the various baths, was not essential to clean working, and the increase in density was far greater than I have been able to get with any other intensifier except lead. If the

bichromate is not all out before the negative goes into the mercury bath, it comes out into that solution, but does not seem to affect its working.

Like the mercury-ammonia intensifier (which it easily beats for density-giving power) this new method can be worked without accurately weighed and measured solutions, but in that case it requires rather a lot of bottles. Being minus reference books or any accurate measures at the time referred to, I got on quite well without, and did not find any appreciable difference resulting from varying strengths and proportions of ingredients of solutions. The way I arranged matters was, first of all, to keep a saturated solution of potass. bichromate, of which a little was diluted for use as required, and a few drops of hydrochloric acid added. If this did not bleach it was poured into a jar, and a few more drops of acid poured in. This bleaching bath does not keep, so it was thrown away after use. The mercury-iodide bath, on the other hand, keeps well in the dark room, and can be used over and over again. As I had no formula by me, I made a fairly strong solution of each of mercury bichloride and potass, iodide. Then a little of the latter was put aside, and into the remainder I poured the mercury solution a little at a time, well stirring and shaking to dissolve the red precipitate that forms when these two chemicals are mixed. A point is reached when a little of the red powder fails to re-dissolve, and it was to get this into solution that the small quantity of the potass. iodide liquor was kept aside. On adding this to the bulk the precipitate disappeared. This strong solution was kept for stock, and was used diluted, but both the stock and working solutions appeared to keep well.

The sulphide solution was made as required

from the crystal, but there is no reason why a stock solution should not also be employed for The used liquor should not be kept after the same day, as in the case of bromide toning. It seemed difficult to get the image thoroughly sulphided right through, so that if the density was too great some reduction was obtained by simply immersing the negative in a hypo bath. Another useful point with this intensifier, as in some others, is that if the plate before sulphiding is seen to be too dense or the lines are veiled, a dip in hypo solution will clear it. Of course, this means another good wash before sulphiding, and it should be pointed out that these extreme methods of working are seldom suitable for anything but line work, as the unevenness of the emulsion is usually very much accentuated by employing strong measures. - D. CHARLES, in B.J.

Organic Intensifiers

Many as are the processes which have been evolved by the ingenuity of the chemical experimenter, it cannot be said that we yet have a perfect process of intensification, speedy in use, performed in one operation, and thus capable of being stopped at the required stage and permanent in its results. Hitherto, with one exception, all intensifiers have been based upon the use of mineral or inorganic compounds, such as the metallic salts which exert an oxidizing action

upon the silver deposit, and thus, in one way or another, allow of an increase of density. exception to which we refer—the single example of an organic intensifier—is that invented some eight or nine years ago by MM. Lumière, in which the oxidizing agent is a quinone com-The departure thus made into the infinitely wide field of organic chemistry is one which has not been followed, although there is every probability that among the many compounds and series of compounds of carbon which exist there are some in which the two properties of oxidizing the silver image and of adding density when so doing are united. Now that the demands of photography, in the matter of developers, are becoming familiar to makers of organic products and intermediates in this country it may happen that the sister process of intensification may come in for a share of attention even though the commercial rewards may be small in comparison with those yielded by a developer.—B. \dot{J} .

The Density of Negative Fog

THE old idea that a negative must have a certain amount of clear glass is held by few printers now, but it is an undoubted fact that with a negative that it is at all inclined to be on the thin side a very slight amount of fog reduces the printing value in a marked degree. It also gives a false impression of the real contrast present and prevents proper judgment of ex-posure when bromide or other development papers are used. It is an instructive experiment to reduce with ferricyanid and hypo one-half of a foggy negative until the shadows are fairly clear, when it will usually be found that although the image, plus fog, appears fairly vigorous, yet, minus fog, it is really quite weak. It is therefore evident, when a negative clouds over in development more than it should do, that the development should be prolonged until considerable density is obtained; then when the fog is removed what is practically a normal negative will be left. If any one suffers from this class of negative, it is advisable that all precautions should be taken to avoid all possible causes of veiling. A very common one is diffused light in the camera; this may be through insufficient shading of the lens, to a dusty or cloudy condition of the glasses, or even to reflection from imperfect blacking of the bellows or woodwork. It is a curious fact that in the wet collodion era, when there was much less liability to fogging, photographers were very careful as to shading the lens with long hoods, cones, or canopies, while now we may find people using rapid anastigmats with half-inch hoods or none at all, and this with ultra-rapid plates. The point should receive especial attention at the hands of those who go in for "fancy" lighting, with the lens pointing more or less directly to the light. With dirty lenses the remedy is obvious: a little alcohol and a soft rag are all that is needed, although a coating of dead black or even black velvet inside the lens tube, is a valuable addition, while treatment with a really dead blacking such as nigrogene on the bellows and framework should complete the cure. If the fogging occurs in the camera the edges of the plate where protected by the rebate should be clear, otherwise the cause must be sought in the dark room. Colored fabrics fade and some red glasses permit a considerable proportion of blue light to pass through. It is worth taking a little trouble in tracing the cause of fog in order to secure clean, easily printed negatives.—B. J.

Milky Fixing Bath

In advance of its season we give the measures that should be taken to overcome it.

The milkiness is an indication that the bath contains sulphur and the result is brown or yellow spots and sometimes a brown tone over

the entire print.

Prints must be hardened, and alum is the best hardener, but alum in combination with hypo will release sulphur which makes the trouble. Acetic acid of proper strength, in combination with pure sulphite of soda, forms a gas which prevents this release of sulphur and forms a perfectly balanced fixing bath.

Impure sulphite containing sulphate, sulphite exposed to the air and becoming sulphate, acetic acid used too strong or in too great a quantity, or the addition of the hardener to the hypo solution before the hypo is thoroughly dissolved will release sulphur and cause the trouble first mentioned. If the hypo bath becomes hot, the gas formed in the solution by the acetic acid and sulphite of soda will partly escape and allow the sulphur to be released.

Prints which have been fixed in a bath containing sulphur may not begin to discolor until they are laid out to dry so the only safe plan is to be sure of the fixing bath. Have a stock solution of hardener made of pure fresh chemicals. Make a fresh fixing bath, use it while fresh, do not allow it to become warm and throw it away

when your prints are fixed.

Drying Marks

Drying marks in negatives are almost certain to crop up, unless the negatives are kept at a fairly even temperature during the whole of the drying process. If part of a negative is dried quickly and the remainder dried slowly, or vice versa, there will be a sharply defined mark separating the part that was dried quickly from the part that was dried slowly, and no after-treatment will remove it.

This trouble is often brought about by placing the negatives too close together in the drying rack, and thereby preventing a free current of air from reaching the whole of the gelatin surface. When negatives are stood up in a rack and left overnight in a cool room with closed doors, they are usually only about three parts dry by the morning. Then a fire is lighted, the room ventilated and drying quickly finished, with the result that there is a marked difference in density between the parts that dried during the night and the parts that dried in the morning.

morning.

The best way to avoid drying marks is to dry the negatives quickly. Before standing them up, the surface moisture should be wiped from

both the fronts and the backs with a damp pad of cotton-wool or a piece of chamois leather. They should be placed a couple of inches apart in the rack, and once they have started drying in one room, should not be carried into another. — Professional Photographer.

Glass for the Studio

A CORRESPONDENT recently asked whether the use of rolled or ground glass for glazing the studio would obviate the necessity for white blinds or curtains in addition to dark ones. In our opinion, in an at all well-lighted position it would not do so, as although either kind would prevent the direct glare which sometimes comes through clear glass, there would be no effective control of the light. There is, however, much to be said in favor of what is generally called "rolled plate" for both roof and sidelights. For one thing, it effectually excludes all view from the outside, even when using artificial light, while another advantage is that the light is more evenly distributed about the studio, with the result that the shadows are less intense, and the exposures shortened in spite of a certain proportion of the light being absorbed. If the glass is neglected dust and dirt will accumulate in the ribs and cause considerable waste of light, but an occasional wash with soap and water, applied with a soft brush, will remedy this. Of ground glass we cannot speak so well. It certainly diffuses the light and is, therefore, useful where there are outside obstructions, for it is well known that a side light of ground glass will give better illumination if there is a wall near than clear glass will. On the other hand, it rapidly gets yellow in a smoky atmosphere, and it is then more difficult to clean than the rolled plate. Moreover, as it diffuses the light more than rolled or clear glass, it is more difficult to get decided effects in lighting with it.—B. J.

Defects in Sketch Portraits

FEW photographers pay sufficient attention to the lighting of the sitter when producing negatives for sketch portraiture, and many examples that we have seen in professional showcases point to negligence in this respect. The charm of a good sketch portrait, in our opinion, lies in its fine tonal quality and delicacy, while if an over-harsh or too unequal lighting is arranged a very inferior effect is obtained. One of the best sketch portraits that we have seen was made with a decidedly flat lighting, but one that, at the same time, by the aid of first-class photography, was a delightful result of tonal quality and color suggestiveness. While on the subject, a word may be added with reference to the sitter's costume. In the case of feminine sitters, the sketch portrait should always be in a high key, and, if possible, the receptionist should advise light clothing free from any trace of dark. We recently saw a bust sketch portrait of a feminine sitter in a high key that was absolutely ruined from the artistic point of view by the inclusion of a dark tie. The removal of this should have been tactfully suggested by the photographer. Many child-portrait sketch

effects in a high key are considerably reduced in artistic value through a dark-colored hair ribbon, and we have before us a delightful full-length sketch portrait of a youthful sitter in a light dress completely spoilt by reason of the fact that the sitter is wearing dark socks, or, perhaps, those of a color that photographed too dark, if a non-ortho plate was employed. The above are some points that have a real bearing upon success and should be noted by all sketch-portrait workers.—B. J.

New Methods of Producing Tricolor Prints

It is generally recommended in making the three negatives for tricolor printing to use panchromatic plates for all three exposures; but my experience is that the best results are obtained when using plates sensitive to that part of the spectrum that is transmitted by the filter used. Thus for the yellow printer an ordinary bluesensitive plate is best, for the red printer an orthochromatic plate, and for the blue printer a

panchromatic plate.

This system, in addition to giving a better analysis of the colors, gives a more convenient means of calculating exposures. For instance, the card issued with a box of panchromatic plates gives the multiplying factors for the three filters as: blue 5, green 12, red 10. But by using, say, a drop-shutter plate, a verichrome plate, and a panchromatic plate of equal H and D sensitiveness we get factors of blue 5, green 7½, red 7½, which are much easier and simpler to calculate accurately from the standard given by

the exposure meter.

For the development of tricolor negatives, the "B. J." pyro-soda diluted five times, or the "B. J." pyro-soda diluted five times, or the Wratten card pyro-soda formula diluted three times, gives infinitely better negatives than any other reducing agent. Tricolor sets should always be developed together, and always in a tank of just sufficient capacity to take the three plates. Tanks to hold only three or four plates are not on the market, but they are easily made. Probably some may dispute the statement that tank development is better than dish; but, before saying anything for or against this statement, it is advisable to try the two methods carefully

side by side.

To produce a tricolor print it is necessary to have a print from each of the three negatives, which is, or can subsequently be made to be, a color complementary to the light-filter which screened the plate used for that particular negative. Of these three prints, two, viz., the pink and the blue, must be quite transparent: so that the colors will blend with those above and below when the three are superimposed, in order The base to make the color print complete. print (the yellow) does not require transparency; but must be a good solid print showing the tones well, with the darker half-tones and shadows graded light to dark gray. Mr. Hamburger gave the clue to this improvement over the dead and muddy-looking carbon yellow base, with his yellow-toned bromide prints; but in those prints the darker tones are reddish and defeat the object aimed at.

The pink and blue elements must be quite

transparent. The amount of color in each must be under perfect control; and this is another point in which the commercial tricolor tissues fail, it being almost an impossibility to obtain two films in which the color left in after development is identical when viewed by transmitted light, although by reflected light, and backed up with light paper, they look quite alike. This difficulty with transparent images judged by transmitted light is also met with in lantern-slide work; and with all processes, therefore, to produce successful tricolor prints (especially in quantities), we must have the pink and blue images perfectly transparent to start with, and dye them to a standard depth.

The idea of having transparent images and dyeing them afterward is not new; but the methods published for obtaining them have not given satisfaction, because the films contained a developed silver image, which in no circumstances could be made quite transparent. The only method by which really transparent images can be made is by carbon; but it is not possible to use a tissue of plain gelatin only, because the light would penetrate right through the more transparent portions of the negative and anchor the gelatin film to the backing paper. If the gelatin is pigmented with just sufficient manganese dioxide to stop the through-light action, then, when the image is developed upon its temporary support, the pigment remaining in the print can be removed entirely by means of a 5 per cent. mixture of sulphurous acid and water, which will leave a perfectly clear and transparent image, which may be easily dyed in any quantity and to any standard. So far as I know, Mr. Edgar Clifton was the first to use MnO₂ in tricolor carbon: but his method was to mix it with the blue pigment, to dilute this and render it more transparent.

Tissue pigmented with MnO2 serves for the pink and the blue constituents of a tricolor image; but for the yellow constituents I use a tissue in which the gelatin is lightly pigmented with lampblack, so producing a tissue that is just sufficiently dense to prevent through-light action. A print made with such tissue will be quite transparent in the lights and lighter halftones, and will have a delicate visible gradation in the deep shadows, which will be gray. When this print is dyed yellow the gradations are perfect from lights to shadow, the whole being

juicy instead of muddy.

If these prints are mounted upon transparent celluloid as the temporary support, development, dyeing, superposition, and transfer are quite easy. With regard to the dyes used, any maker's dye may be used so long as it is a wool dye. Judson No. 20 for the yellow, No. 34 for the blue, and No. 35 for the pink all work well. All the images take their respective dyes quite readily, and do not easily over-dye. The washing necessary to remove free dye does not reduce the dye in the image unless unduly protracted.

The tissue pigmented with lampblack lends itself to another method of making tricolor prints. For this method prints are made from each of the three negatives and developed upon celluloid; the yellow image is then dyed, and afterward transferred to paper, soaked in formalin and again dried, and again soaked in water. The pink print on the celluloid is dyed in the pink dye, and when fully dyed is washed until all free dye is removed. The wet yellow print is put in contact with the pink print, and when properly superimposed the two are squeegeed in contact, placed between sheets of wet blotting-paper, and under a weight for a few minutes. When the print is stripped away, the pink image will be found set off upon the yellow. The print is dried, then again wetted, and having dyed the blue image, it is mounted in contact and left between sheets of wet blotting paper and under a weight. When the print is stripped from this there will be a very delicate tricolor image.

This imbibition method will be found quite reliable as to results, because all the surplus gelatin has been removed. Consequently only just sufficient dye is absorbed for making the

images.

In my first experiments toward obtaining perfectly transparent images I made some tissue with plain gelatin, and then made up three sensitizing baths. In one was mixed the yellow dye, in the other the pink dye, and in the third the blue dye. After exposure and development the images were quite good; but in all there was a deficiency of depth of color, but this was remedied by a subsequent immersion in fresh dye. It was rather a messy operation sensitizing, and the hands were afterward quite interesting color studies, so this method has not been fully investigated, and is mentioned in case someone would care to work it out.

The print is first soaked in warm water, blotted off, laid face upward on a sheet of glass, and a little glycerin is rubbed into it, and then blotted off. The ordinary stock solution of gold chloride, of a strength of one grain to the dram of water, forms the toning bath. A few drops only of it are needed, and these are poured on to the print and at once spread all over the surface with a camel-hair brush or a tuft of cotton-wool. The action is a rapid one, and as soon as it has gone far enough the print is thoroughly washed. To prevent stains from appearing at a later stage, it is placed in an ordinary metol developer for two or three minutes, then

well washed and dried.

Uranium ferrocyanide can be deposited upon a platinum print in the same way in which a bromide print is toned with it, and some very pleasant colors are obtained by that means. Ten per cent. solutions of uranium nitrate, of potassium ferricyanide, and of sodium sulphite may be made up. Half an ounce of acetic acid is diluted with water to make 5 ounces, and to this 1 dram of each of the above solutions added in the order mamed. The print after toning in this is washed until the whites are quite free from any stain and then dried. This gives a very fine brown color, and at the same time intensifies the print a little.

As uranium ferrocyanide was practical, I thought copper ferrocyanide, which gives such rich tones to bromide prints, might also be used with platinum; but this, so far, has not succeeded in my hands. I have tried a number of modifications of the Ferguson method; but only succeeded in altering the color of a platinum print when the

whites also were stained. It is probable that any toning action that took place was due to traces of iron in the paper, and not to the plati-

num image itself.

An interesting method of getting brown tones on platinum is by the Packham method. This employs Bengal catechu, half an ounce of which is boiled in a glass flask in half a pint of water for a few minutes. Two ounces of alcohol are added and form the stock solution. The toning bath consists of half a dram of this stock solution to a pint of water, and in this the prints tone to a fine warm sepia. If the bath is used hot, and especially if potassium oxalate and cane sugar are added, the toning is rapid; but a cold solution of the catechu by itself will gradually tone the image, the action being complete in a few hours. The prints can be left in the liquid face downward undisturbed, and merely looked at from time to time until they have toned sufficiently, when they are washed and dried.—W. T. WILKINSON in *Photography*.

Transferred Bromides

Now that bromide paper is the almost universal printing medium with many photographers, more attention might with profit be given to the transfer variety, which, if carefully used, may be the means of imparting an individual and artistic expression to photographic work. We can recall a case recently in a large exhibition where considerable attention was attracted by a picture upon one of these papers which was transferred apparently to a brownish paper. The whole effect was most original and uncommon. The other day we noticed some cabinet-sized portraits upon quite large mounts in a certain photographer's show-case. Examination revealed the fact that they were originally made upon one of these papers and transferred to the mounting paper. A delicate tint was worked in round each print with water-color, thus imparting a most delightful finish. This offers a considerable saving over the plan sometimes adopted of making the prints upon large sheets of paper and carefully masking off the picture, while the result is to all intents and purposes the same. That the picture is reversed by the transferring has never to our mind been a serious objection to the process, as the average sitter would quite fail to notice it, but if the operator's intention is to use the process in carrying out some definite scheme the plate may be put into the slide, glass side to the lens, and the slight difference allowed for when focussing. The back of the plate should be carefully cleaned, and the film protected from abrasion by the metal dividing plate of the slide. For this there is nothing better than a piece of card covered with black velvet cloth.—B. J.

Photographic Materials and Processes

Metol (N-methyl-p-aminophenol sulphate); Preparation of —. R. N. Harger. Jour. Amer. Chem. Soc., 1919.

In the preparation of metol from quinol and methylamine by Merck's process (Ger. Pat. 260,234; this J., 1913, 807), better results are

obtained by using a lower temperature and a much shorter period of heating than those specified. By heating 20 grams of quinol with 2 equivalents of aqueous methylamine (10 N) for four hours at 200° C. in a sealed tube, then pouring the product into a quantity of sulphuric acid (1:20) equivalent to the methylamine used, concentrating, and cooling with ice, a total yield (including that recovered from the mother liquor) of 73 per cent. of the theoretical quantity of metol was obtained. Metol begins to char at 245° C. and melts with decomposition at 250°—260° C. It is soluble in 6 parts of boiling water and in 20 parts of water at 25° C. A solution of metol gives an intense purple coloration with mercuric acetate, and this reaction may be used to determine metol colorimetrically. Quinol and salts of p-aminophenol do not give a coloration with mercuric acetate; amidol (2.4-diaminophenol) also gives a purple color, but this is changed to pink on addition of acetic acid, whereas the purple color due to metol is not affected by acetic acid.

Photosensitizing Dyes

Messrs. Mikeska, Stewart and Wise publish two very important papers on the preparation of quinaldine, p-toluquinaldine, quinoline and 2, 4 dimethylquinoline, from which pinaverdol and pinacyanol, the two best sensitizers for emulsions for green and red that are known. The papers are too lengthy for useful abstraction and would actually only interest chemists.—

Jour. Ind. and Eng. Chem., 1919, p. 456-463.

[The above two dyes were originally prepared by Meister Lucius and Bruening, of Hoechst am Main, and were quite unobtainable during the war. Prof. Pope, of Cambridge University, prepared them and they are sold by Ilford, Limited, under the name of sensitol green and sensitol red. It is to be hoped that some enterprising firm will take up the manufacture of these dyes on this side.—E. J. W.]

Yellow dye; New, and (photographic) light filters made from it. C. E. K. Mees and H. T. Clarke. Communication No. 75 from Eastman Kodak Res. Lab. Brit. Jour. Phot., 1919, 66, 48.

The dye most commonly used, before the war, for the preparation of yellow light-filters for use with color-sensitized plates was the German Filter Yellow K, introduced in 1907. A satisfactory substitute for this has been found in the group of phenylglucosazones, the best compound being the sodium salt of glucosephenylosazone-p-carboxylic acid. This is prepared from p-nitrotoluene by successive oxidation, reduction, diazotising, and formation of the glucosazone of the resulting acid. The acid is insoluble in water and almost insoluble in water and gives light-filters which are very stable to light, though not quite so stable as those prepared with Filter Yellow, have a sharper cut in the light blue than filter yellow, and nearly as strong an absorption in the ultra-violet. Absorption curves are given for filters of various strengths of the new dye, Eastman yellow, compared with filter yellow and Tartrazine.

PATENT NEWS

Polychrome cinematography. Color photography. A. Hamburger, London. Eng. Pats. (A) 123,786 and (B) 123,787, 3.12.17. (Appls. 17,881 and 17,882/17.)

(A) In the production of two-color cinematograph films where a film coated on both sides is used for the formation of the two positives, both sides are colored simultaneously. Three methods are given for carrying out this process—(a) The double film is passed between two bands of absorbent material passing over rollers and kept moistened with the respective dye solutions. (b) The film is passed through a series of clamping frames so arranged as to make liquid-tight connections along the edges of the film and hold the required dye solutions in separate chambers in contact with the film on each side. (c) The film is passed between bands of dyed carbon or gelatin-coated paper. The dyeing operation may be preceded by or combined with a bleaching of the images, a suitable bath being a solution of copper sulphate, potassium bromide, and potassium ferricyanide. A convenient way of combining the bleaching and dyeing operations is by process (c), the dyed carbon or gelatin-coated paper being soaked in the bleaching solution before application to the film. (B) Methods b and c of the preceding patent are applied to single pictures, a special design of frame for process b being described. The method may be extended to three-color pictures, the two-color film obtained in this way being combined in register with a third, preferably yellow, positive.

Photographic light-filter. H. T. Clarke, Assignor to Eastman Kodak Co., Rochester, N. Y. Pat. 1,293,039, 4.2.19. Appl., 1.7.18.

A STABLE yellow light-filter, having a sharpcut absorption in the blue-violet and a sustained absorption in the ultra-violet, is obtained by dyeing gelatin film with sodium glucosephenylosazone-b.b'-dicarboxylate.

Etched intaglio printing surfaces, method of producing. C. W. Saalburg, Richmond Hill, Assignor to Multicolor Intaglio Press Co., New York. U. S. Pat. 1,290,786, 7.1.19. Appl., 27.2.17.

In the production of an intaglio printing surface the resist is formed of two superimposed carbon tissue prints, the lower one being from a half-tone negative, the upper one being a grain-screen print.

Color photography; Subtractive and additive —... W. V. D. Kelley, Brooklyn, Assignor to Prizma, Inc. U. S. Pat. 1,278,162, 10.9.18. 'Appl., 8 2 17

In a four-color process for cinematograph film the colors of the taking screens are in two complementary pairs; in printing a positive from the four-color negative record a film coated on both sides may be used, two of the color records being

printed on one side of the film, and two on the other side of the film in register with the first two and each of the color records having its complementary opposite to it. The positives on one side of the film are stained one suitable color and those on the other side the complementary color. For example, if the taking screens are red and yellow and their respective complementaries green and blue, the positives on one side of the film are from the red and yellow color records and are stained a blue-green, and those on the other side are from the green and blue records and are stained an orange-red, the yellow color record being opposed by the blue and the red by the green. Instead of using film coated on both sides, a single-coated film may be used for the first set of positives, which is then recoated for the second set of positives.

[Photographic] color-printing. D. F. Comstock, Brookline, Assignor to Kalmus, Comstock and Wescott, Inc., Boston, Mass. U. S. Pat. 1,283,087, 29.10.18. Appl., 31.7.16.

In multicolor photographic processes where two or more negatives are taken through two or more colored screens, a certain amount of inaccuracy of color rendering results, if all the negatives have to be developed for the same length of time, by reason of the differences in steepness of gradation of the negatives produced by exposure to lights of different wave-lengths; the light of longer wave-length gives the steeper gradation. For example, if red and green screens are used the negative through the red screen will have a steeper gradation than that through the green screen; this difference will normally be repeated in the positives and it will not therefore be possible to get a correct color balance through the whole scale of tones of the picture, there being either too much green in the shadows or too much red in the high-lights or both. This difficulty is obviated by printing the positives by lights differing in wave-length in the opposite direction to that of the taking screens, for instance, printing the red negative by a violet light and the green negative by a blue light, the difference in gradation of the positives thus counterbalancing that of the negatives.

Photographic reduction with ferric ammonium sulphate. H. Krause. Z. Wiss. Phot., 1918, 18, 192—197.

Ferric alum in neutral solution slowly reduces the intensity of photographic images, but more rapidly in slightly acid solution. Changes of temperature and concentration and the presence of chloride ions have little effect on the definition of the reduced image. A neutral solution converts the silver of the plate partly into soluble silver sulphate and partly into an insoluble compound, probably silver oxide. The formation of the insoluble compound is prevented by the presence of acid and this probably explains the more rapid action of the acidified solution.



REPLIES TO QUERIES



5 fl. oz.

EDITOR PHOTOGRAPHIC JOURNAL OF AMERICA:
As a negative retoucher I would like to know how to prepare a good medium. I find that the rubbing of the surface of the negative with water of coated pumice powder is not always satisfactory. Your reply will be esteemed by others besides myself engaged as retouchers.

B. Thompson.

Any of the following preparations are good and reliable as retouching mediums:

Gum dammar Spirit of turpentine .	:	:		dr. fl. oz.	
2.					
Gum dammar			40	gr.	
Canada balsam				dr.	
Spirit of turpentine.		•	4	oz.	
No. 3 is excellent; it is ea 3.	sily	and	che	aply n	nade:
Common clear rosin.			2	dr.	

Spirit of turpentine.

EDITOR, PHOTOGRAPHIC JOURNAL OF AMERICA:
SIR: When making enlarged negatives, with
a 8 x 10 from 4 x 5 transparencies, I cannot get
rid of a certain granularity of texture in the
negative, can you inform me how this defect
may be rectified.
T. COLLINS.

When making an enlarged negative from a transparency, do not allow the transparency to become dry. As soon as the transparency is *surface* dry only, make the enlargement, no grain will be visible in the enlarged negative.

REPLY TO G. JENKINS:

When cleaning the surface of old gelatin negatives, I find some difficulty in removing finger marks. Can you inform me as to the best material I can use for their removal and clean the plate uniformly?

the plate uniformly?

If there are no silver stains upon the negatives the following preparation will be found to answer the purpose:

Wet a piece of canton cotton or soft rag with this mixture, apply all over the surface of the negative, then rub the surface well all over with a soft dry cloth.

The Photographic Tournal

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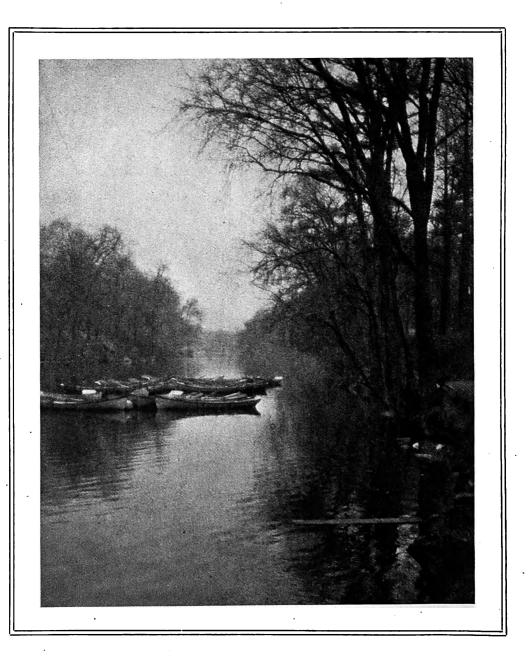
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"MORNING ON THE BRONX"
By FLOYD VAIL, F.R.P.S.
NEW YORK





PHOTOCRAPHIC JOURNAL MAKERICA

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PICTORIAL WORK OF FLOYD VAIL, F.R.P.S.

THIS issue of the JOURNAL contains several examples of the work of Mr. Floyd Vail, of New York City, one of the most accomplished pictorialists in this country.

Mr. Vail began the study of art when a young man and, shortly thereafter, took up photography as a pastime. Very soon learning its possibilities as a means of artistic expression, he commenced to employ it seriously, and has continued to do so ever since.

He has been an exhibitor for many years at salons here and abroad in various countries. Also, his pictures have been published frequently in this country and Europe.

Some years ago Mr. Vail's work comprised figure studies and genre, but latterly he has confined his efforts principally to street scenes and land-

Analyzing a number of his prints, one sees that, like Millet and other modern artists, he "prefers the synthesis." Mr. Vail does not strive to depict objects, form and facts so much as to convey an impression of these, and to

make them the setting for the spirit, mood and hidden meaning of his themes. His pictures all have expression or sentiment; and they are rich in atmosphere and variations of light, render or suggest the feeling of the season or hour, or interpret a fleeting aspect or attribute of Nature. Some may see nothing in his work but the ordinary and commonplace; but those who know, and especially the artist, will discern at once the deeper significance of his productions and their artistic merit and force.

The reproductions herewith may or may not show perfectly the qualities of the originals, but in "Morning on the Bronx" we have a picture with beautiful pattern and pleasing lines; the values are well maintained; the light is softly diffused throughout; there is mystery in the shadows; the outlines melt and blend attractively; it is excellent in tone. There is no assertion, however, but suggestion; it is the broad, simple message that the picture imparts. But all this, if there were nothing else, would differ little from what one often sees in the best work at exhibitions. In addi-

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tion—and what is usually lacking—there is borne in upon the beholder the mood of the hour—a sense of profound silence and loneliness, which so impresses and influences that one forgets for a moment one's real surroundings and is lost in the great creation and its spell. Without this power to arouse and impress, photography or any other form of expression is only statement, merely fact.

We have gone somewhat into detail with respect to this picture, not that it is better than the others, but in order to illustrate what we have said above, in a general way, of Mr. Vail's aims and results; and it will render unnecessary too lengthy a description of his other examples. From this our readers will be able to penetrate into the spiritual or emotional meaning in all our illustrations.

In "Twelve Below" is seen a landscape covered with icy snow, adhering to the ground and to the trunks; the three trees in silhouette are repeated by the three dark figures on skis, the group serving as an accent, to balance and to lead the eye into the view. The sky is dark blue, as often happens on a very wintry day, and connects up and unites the whole picture, by which the imagination is awakened and one is made to feel the chill and the bitter cold. This is a relic of the severe winter of 1917–18.

"Homeward" depicts an occurrence in every-day life.

"The playful children just let loose from school," hastening homeward, scurrying along by a short cut. The incident is developed amid interesting scenery, appropriate masses and contours and excellent design; and not the least attractive feature is the beautiful, delicate sky of several values. This picture is full of animation and action, and will recall to many their boyhood days.

"Museum of Natural History" presents an artistic treatment of architecture. The building is bathed in sunlight, diffused and softened by distance; the foreground and middle-distance, more clearly defined, charm by tonal gradations and the spirit of budding springtime.

"Fading Light" reminds one of Whistler and the Japanese art by which he is said to have been influenced. It is a most unusual and convincing photograph, with breadth, suggestion and simplicity; and the whole space is imbued with the sentiment of the land-scape and filled with vapory light, slowly disappearing.

"Autumn Haze" obscures the distance, encroaches upon the rest of the view and suggests perfectly the evanescent nature of autumn light, shimmering, glimmering, "half-concealing, half-

revealing."

"Winter Sunshine" recalls Tryon or Twatchman in the simplicity and balance of its composition, and the dim radiance of winter sunshine.

"Morning" is quite like a Corot in its design and the feeling and poetry manifested by its misty light, gradually

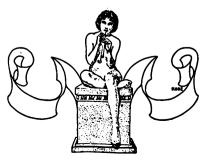
increasing.

While these several pictures suggest the characteristics of the artists mentioned, all of Mr. Vail's work is original with him, and is produced with no desire to imitate painting or other media; for he believes and exemplifies that photography can maintain its own, within its limitations, the resemblance resulting only from similar material being employed.

Mr. Vail is an experienced art critic, and has been connected with a number

of publications in that capacity.

T. C. W.



PLATINUM AND PLATINUM PAPER FOR PHOTOGRAPHY

By ALFRED J. JARMAN

THE metal platinum is one of the elements that resists the corrosive action of nearly every other element. This was the principal cause of its being brought into use for the production of a photograph that would withstand the ravages of time and the corrosive action of atmospheric sulphurization; in other words, for the production of permanent photographs. Owing to the high price of the metal during the last four years, caused by the World War, the demand for platinum for use in the construction of chemical vessels, particularly for the manufacture of retorts for the distilling of the strong mineral acids, such as sulphuric and nitric acids, placed it beyond the reach of photography, where it held an important place for many years. As soon, however, as the price of the metal comes down the manufacture of platinum paper as a photographic commodity will take place again. Meantime, this article will give the necessary instructions for the preparation of paper for the production of the platinum image, with a short account of the discovery of the metal, which has hitherto never been found in a pure state, but always in combination with several other metals, all of which are powerfully resistant to the action of the most corrosive elements as well as the mineral acids.

In 1768 a piece of platina was brought to Europe from the Choco district of Columbia by Antonio de Ulloa, a Spanish naval officer. It was found among some small nuggets of gold. Platina, he said, could not be separated from gold by any process then known. He stated that the metal was very tough, but when refined with gold it made the latter metal unworkable. Charles Wood, in 1735, brought some platinum in grains to England from Cartagena, in Columbia, while William Browning examined it and stated it to be a metalloid in 1750. Doctor Lewis, in 1754. described platinum as a peculiar metal,

Scheffer, the assayer of the mint at Stockholm, investigated the properties of platinum, and the results of his investigation were given to the Royal Academy of Stockholm. He spoke of it as white gold, a name given to it by the early miners of La Plata (whence it obtained its name). These miners regarded this white gold as useless, and when separated from the yellow metal it was dumped in considerable quantities into the La Plata River. Schaeffer made the discovery that a mixture of nitric and muriatic acids would dissolve platinum and that it was also a true metal.

About this time Margraf made the discovery that chloride of platinum produced a precipitate when mixed with a salt of ammonium, such as the chloride of ammonium. He was the first person to produce spongy platinum, while Schaeffer showed that nitric acid would not attack this metal. In 1778 Count von Sichingen made the discovery that spongy platinum could be welded at the white heat of the wind furnace like wrought iron, also that this welded metal could be hammered into small rods, drawn into fine wire and made into thin plates. These important discoveries were communicated to the French Academy in the same year.

It was not until 1819 that platinum was discovered in very large deposits in Russia, in the gold placers of the Ural Mountains. It is from this source that the greatest amount of platinum now obtained. The following analysis, by Faraday, of ore from the above source will show the other metals with which it is always more or less associated:

Platinur	n							76.4
Iridium								4.3
Rhodiur								0.3
Palladiu	m			•	•			1.4
Gold .	•	•				٠	•	0.4
Copper	•	•	•	•	•	٠	•	4.1
Iron	٠		•	•	•	٠	•	11.7
Osmide Sand.	OI IF	ιαιι	ım	•	٠	•	•	0.5
sand.	•	•	٠	٠	٠	٠	٠,	240 \
							(349)

Platinum in a very pure state was first produced by Dr. Wollaston, in England, by first dissolving the crude ore in nitromuriatic acid, precipitating the platinum as chloroplatinate of ammonium with sal ammoniac, heating this dried precipitate to form spongy platinum; this product, being moistened was then compressed with water, firmly in a brass tube and dried, when it was submitted to the highest temperature obtainable in the fire of a smith's forge and welded like wrought iron with a hammer upon an anvil, thus producing a solid ingot of platinum, which could be rolled into sheet or drawn into wire. A great improvement was made upon this method of welding by Robert Hare, of Philadelphia, in 1847, when he found that the spongy platinum could be fused by the oxyhydrogen blowpipe and the melted metal cast into ingots in a mold, these ingots being of considerable size. Hare was enabled to melt as much as two pounds of the metal at a time, which then could be rolled into sheets of any thickness or drawn into wire or molded into crucibles for use by the chemist. Hare's process was considerably improved by the French chemists Deville and Dehbray, who made large flat crucubles of quicklime, into which is fed, through a top cover of the same material. scraps of platinum ore, lead sulphide and a small quantity of lead. addition causes the platinum to fuse more readily, the lead sulphide attacking the trace of iron in the ore, while the lead becomes transformed into litharge. At the high temperature of the oxyhydrogen flame these products either volatilize or flow from a lip at the surface as molten slag, although, owing to the lime being porous, most of this slag is absorbed, while the metallic platinum is poured into ingots, as in Hare's process, together with the other refractory metals.

The production of pure platinum free from palladium, osmium, iridium, etc., is a difficult operation. As this does not concern the present article, the process of obtaining the metal previous to its use for photographic purposes has been given to enable the photographer to gain a little insight into the primary

stages that are necessary for the production of this beautiful and extremely useful metal.

The Preparation of Platinum Paper

It must be understood, in the first place, that the salts of platinum that are used in photography are not sensitive to the action of ordinary light. The action of light in producing the photographic image in platinum is due to causes that will be explained when the point of printing upon the paper is described.

Ona cause of failure in preparing what may be termed home-made platinum paper is that the iron salt or salts necessary in the preparation are totally unsuited for the purpose. The way to be successful is to prepare the iron salt oneself. Care must be taken at every step, so that the product does not become contaminated with impurities of any kind. Given that the necessary care is taken, the result will reward the operator with complete satisfaction in the production of prints in black.

All operations in preparing the chemical solutions must be carried out under a deep orange-colored light.

Preparing Hydrated Peroxide of Iron.

Sixteen ounces of C. P. perchloride of iron must be dissolved in one gallon and a half of boiling water in a twogallon stoneware crock. When the perchloride has dissolved, which may be aided by stirring with a strip of glass, add thereto fourteen fluidounces of stronger water ammonia, a little at a time; stir the mixture well during the operation. The mixture will thicken considerably by the time the last of the ammonia has been added. The heavy brown mass that has formed is the hydrated peroxide of iron. The color will be of a light brown if the operation has been successful. This precipitate must now be allowed to settle, when the clear liquor may be carefully drained by decantation, and the crock filled with clean, cold water, the mixture being well stirred at the same time. The contents must now be allowed to subside,

¹ The term stronger water ammonia is invariably used in practice. It means ammonia of .880 specific gravity. Liq Ammon. Fortis.—A. J. J.

which will require several hours, then drained again as previously, refilled with cold water and drained again until by testing the wash water with a solution of nitrate of silver thirty grains dissolves in one ounce of distilled water. If no white cloudiness is produced the making of the precipitate will be complete. If a cloudiness is still produced the washing must be continued until no milkiness is produced. The making of the precipitate is then complete.

Filtering the Precipitate

A large glass funnel must now be provided and placed in the top of a large jar, so that it may stand firm and not topple over when filled. Place in the funnel a piece of absorbent cotton, pulled out so as to form a web; upon this place a suitable-sized filter paper, so folded that the apex rests upon the absorbent cotton; this cotton will strengthen the filter paper at the apex, and thus prevent any loss of the peroxide through breaking of the paper. Pour into this the wet peroxide, rinse the crock with distilled water, pour this into the funnel also, and allow the whole to stand and filter, which will require about twelve hours. expiration of this time, fill the funnel to the brim with distilled water and allow to filter as before, when it may be converted into ferric oxalate by placing in a stoneware crock (with a small top and cover) half a pound of C. P. oxalic acid dissolved in ten ounces of hot distilled water, the whole of the peroxide being added and stirred well. Now cover the crock. Place this in the dark; allow to stand for twelve hours; stir the mixture well with a glass strip occasionally for about five days, when chemically pure ferric oxalate will be formed, which solution when tested with an argentometer will indicate 65 or 70 upon the scale. The solution at either of the above strengths will answer the purpose required. It must be seen to that the peroxide should always be in excess, so as to allow the precipitate to rest upon the bottom of the (All these operations must be carried out under a non-actinic light,

such as a deep-orange color, not necessarily ruby.) Upon testing the solution, by filling a test-tube with the oxalate, after the five days, brewing, it will be found that the liquid presents a greenish-brown color; this is the ferric oxalate in solution, suitable for platinum-paper coating.

Coating the Paper

A suitable trough will be necessary for coating the paper, one made of wood, with the bottom fitted tapering downward in the middle, and coated with two This plan coatings of shellac varnish. of construction will permit of the solution remaining in the center of the tray, so that a much smaller quantity of liquid may be employed than would be required if the bottom of the tray were flat. A number of strips of wood (half an inch wide, one-eighth of an inch thick, the length being allowed according to the width of the paper to be coated) will be required. These strips should also be coated with shellac varnish. Three or four dozen wood clips must be provided; the flat-tipped kind used in photography are best suited.

The ferric-oxalate solution must be kept in an orange-colored or amber-colored bottle, and marked "stock solution." Half a dozen amber-colored glass bottles will be required, and marked A, B, C, D, E, F - A being ferric oxalate; B a solution of ferric chlorate, prepared by the admixture of two fluidounces of A with half a fluidounce of potassiumchlorate solution (composed of one dram of potassium chlorate dissolved in five fluidounces of distilled water); C potassium chloroplatinite, made by dissolving one ounce of the salt in ten fluidounces of hot distilled water; D, half an ounce of C. P. nitrate of lead dissolved in five fluidounces of boiling distilled water; E, a saturated solution of oxalic acid; F, a thick solution of gum arabic, with a few drops of 5 per cent. carbolic acid solution added.

Paper that answers the purpose for hand coating may be obtained from any art store, both plain and rough. The paper may be cut into strips about ten inches wide and two feet long. A suitable drying closet must be provided, heated by a gas stove; also a damping closet, consisting of a suitable-sized box lined with white blotting-paper, with copper wire stretched across the top for suspending the sheets of paper. The drying closet is fitted in like manner. The sheets of paper must now be clipped to a varnished wood strip, by three clips at each end, and suspended in the damping closet after the sides and top have been well wetted, so that the water is retained by the blotting paper. While these sheets are becoming damp the following mixture must be made and filtered for coating the paper:

The Sensitizing Solution

All the various operations must be conducted under orange-colored light. Mix in rotation the following: A. three fluidounces; B, six fluidrams; C, three fluidounces; D, three drams; E, thirty drops; F, two drams. Place this mixture in an amber-colored bottle. shake it well and filter through a small plug of absorbent cotton in a glass funnel. A flat strip of glass should be placed in the bottle that receives the filtered solution, so that the liquid falls upon it; this will prevent air-bubbles being formed. Pour this solution into the tray, take one of the damped sheets of paper, hold it so that it assumes the shape of the letter J. Place the short end of the bend so that it just touches the liquid, then raise this end so that the paper passes over the liquid, thus coating it from end to end; return it so that the coating finishes where it began; hold the paper at an angle so that the liquid drains from one corner against the side of the tray; the excess of liquid may be wiped from the paper with a camel-hair quill-brush, the paper then being suspended in the drying closet heated to 140° F. (not higher). The remaining sheets of paper are coated in the same way and dried. Just as soon as they have become dry they must be removed and placed in the damping closet again for a few minutes, and then coated again (taking care to drain the liquid from the opposite end of the paper), and dried again, when they may be trimmed at each end, carefully

rolled and placed in a tin case with a good-fitting lid and a pellet of calcium chloride (not chloride of lime), wrapped in cheesecloth and paper, placed at the bottom of the tin. This will preserve the paper from damp, when it may be cut to the size required for printing. All waste paper and drippings of solution absorbed by blotting paper must be saved, owing to the great value of the platinum content. The bottom of the drying closet also must be covered with stout blotting paper, so as to absorb any liquid that may fall from the wet sheets of paper. The washings of the bottles and tray must also be saved and taken up by waste blotting-paper, or poured into a stoneware crock for precipitation of the platinum. A few pieces of scrap zinc will do this readily.

Solution for Cold Development and Printing the Image

A test should be made by taking a small strip of paper, placing it upon a well-developed negative and exposure made to daylight in an ordinary printing frame. If printed in sunlight, the printframe must be covered with tissue paper. Make the developer as follows:

DEVELOPER

Neutral potass		tala	te	61/2	oz. av.
Sodium phospl	•			11/2	oz. av.
Boiling water				56	fl. oz.

Mix this in a small stoneware crock; stir well with a strip of glass; allow to become quite cold; filter the solution; use without diluting. Upon inserting the test strip the image will quickly develop to full density, when it must be quickly removed and placed into a clearing solution composed as follows:

Hydroc	hloi	ic	acid	(C.	P.)	1	A.	oz.
Water							50	fl.	OZ.

Five minutes in this will clear the print to a great extent, when it should be placed in a similar bath containing in addition one ounce of chloride of calcium. This will aid in clearing the print. A third bath, same as the first, must be used, and the print or prints allowed to remain therein for ten

minutes, when they may be washed in running water for half an hour, then dried, either by blotting or suspending,

trimmed and mounted.

The production of the platinum image is brought about by the action of light upon the iron salt, which converts the ferric salt into the ferrous. This salt in combination with an oxalate will precipitate platinum in a metallic state; hence, where the light has acted most, the platinum will be precipitated in a jet-black state, while in the halftones, where the action has been less, the metal will be precipitated in like proportion; hence the

photograph in metallic platinum. use of hydrochloric acid to clear or fix the print, as it is sometimes termed, dissolves the ferric salt from the paper, leaving the platinum alone to form the print.

The first and second acid clearing solutions must also be saved by pouring into the crock that contains the washings of the bottles and utensils. The muddy precipitate that collects at the bottom contains the platinum. This precipitate must be separated by filtration, the mass dried, and together with the paper scrap sent to the refiner.

NEW METHODS OF COMMERCIAL PHOTOG-RAPHY THAT SUGGEST ATMOSPHERE FOR THE PRODUCT'

By BURNHAM McLEARY

N enameled-ware kettle can flaunt its virtues from a page of text without in the least suggesting a lack of clothing. So can alarm clocks and electric ranges. Grand pianos, on the other hand, possess in their souls, metaphorically speaking, the elements of harmony that demand harmonious surroundings. This is true in the home, and it is no less true in the advertisements. The effort to create for such products, by illustration and text, an atmosphere of elegance and refinement has always been one of the most elusive problems that the advertising man has had to meet.

Now comes soft-focal photography to contribute its share to the solution. Borrowing a leaf from the modern illustrator's notebook (the illustrator, in turn, having first borrowed his idea from the portrait photographer), the commercial artist-photographer is now aiming at the same subtle effects that have been the delight of both magazine editors and magazine readers for a number of years, and is directing them toward

1 Courtesy of Printer's Ink.

investing the advertised product in an atmosphere of naturalness and charm that, curiously enough, can often be made so dominant in an illustration that the product may be made quite subordinate without loss of selling strength.

This new turn in advertising art is being used to excellent advantage by one or two of the men's clothing houses. notably L. Adler Brothers & Co., makers of "Adler-Rochester" clothes, and the Snellenburg Clothing Company, maker of Keep-Kool Summer Clothes. It is also being applied to the advertising of Vogue hats, Rogers Brothers silverware, Rudolph Scrieber Jersey Cloth, B. V. D. underwear and Grinnell sprinkler systems.

The method employed to secure these realistic effects is the use of a special diffused lens which takes the photographs in perfect focus, but with a softened effect. The theory of this method is based on the fact that the human eye sees things in masses. When you look at a man's suit, for instance, you do not see each button, each seam, and every stitch—that is, unless you are in the clothing business. You see the suit as a quick impression, favorable or unfavorable. An earlier vogue depicted a sort of young demigod, able to wear his clothes without stirring up even an honest wrinkle—thus arguing a misspent youth. Soft-focal photography says, "Put in the wrinkles, but soften them. They're there, and they're needed to give the picture the atmosphere of reality."



"IF A MAN WEARS ADLER-ROCHESTER CLOTHES," THIS
PICTURE SEEMS TO SAY, "HE WILL BE PERFECTLY
AT HOME IN REFINED SURROUNDINGS."

The car card featuring Keep-Kool Summer Clothes illustrates this principle admirably. The outline of the tailoring is not emphasized; indeed, it is practically impossible to recognize a button or a seam. But the atmosphere is there, and to make it good and definite the advertiser has even been bold enough to introduce an attractive young lady, who by all the laws of straight photography should dominate the scene. By diffusing the effect and suppressing details, however, she merely gives added charm.

The scene in the drawing-room, in which the gentleman in "Adler-Rochester" evening clothes is paying marked attentions to a beautiful lady, also illustrates the attention that certain advertisers are paying to "atmosphere,"

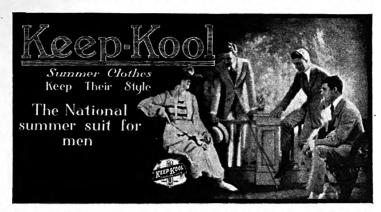
to the subordination of mere technical details. The underlying suggestion is that a man who wears this particular brand of clothes is entirely at home in these alluring surroundings, and he, too, may pay court to ladies fair and with a gallantry as to the manner born.

Peculiarly appropriate this sort of photography seems to be for softening hard lines and taking out the exactness that so often offends in the advertisements of ladies' garments. When the appeal is on a straight merchandising basis, of course, and the desire on the part of the advertiser is to reproduce with strict fidelity every line of a garment, soft-focal photography is not the thing at all. But where the atmosphere of naturalness is desired and the suggestion that a particular sort of garment is worn by women who live in fine homes and are accustomed to elegant thingsas is the case with the advertising now being done by Rudolph Schreiber-or when a lady's hat, let us say, needs an artistic setting, as it so often does, to bring out its character, then soft-focal photography appears to be a peculiarly happy medium.



GETS AN AIR OF ELEGANCE

A group picture made use of by Rudolph Schreiber, shows three girls in pleasant humor looking at a photograph so indistinct that you almost have to guess it's a man. By skill in placing



A MARKED DEPARTURE FROM THE TYPE OF CLOTHING "AD" THAT DEPICTS EVERY
SEAM AND BUTTON

the subjects the young ladies are made the dominant figures in the picture, though no effort is made to show the exact character of the textile (Jersey Cloth) other than to suggest that it is made up into stylish dresses worn by thoroughbreds. For the rest, the outlines of a bed, a table and a reading-lamp are so softened that the mind, in a quick taking-in of the picture, gets more the abstract impression with which nice things are associated than exact impressions of just what those nice things are.

So, too, with the vogue hat. The art in this picture is to show in semi-silhouette a stylish hat against a Japanese lantern and to make the entire composition one suggestive of grace and elegance. The exact material of the hat or its hard, firm outline is the last thing in the world that the advertiser seeks to get across. Indeed, if he should get this across in the photograph he would be reproducing a mental picture not true in human experience. People see things in masses, almost never in all their detail. goal is a reproduction, effected through a combination of photography and pictorial art, of the actual picture which flashes across the human mind, a reproduction that will accurately reflect its spirit and substance.

The principle is that which the copy writer employs with such telling effect when he starts the reader upon a train of thought that leads him on and on in the building of mental pictures all very pleasant and alluring. If he went the whole distance, the effect would be

ruined. He must give the reader a chance to use his own imagination.

This is just what is accomplished in the photograph showing in silhouette against the softened light that shines through the glass doors of the breakfastroom, a happy young couple fondly surveying their gift of Rogers Brothers' silverware. Here again the product is not shown in sharp detail, but rather as furnishing the last detail in a scene to which everything has contributed its element of refinement. This illustration shows the tendency in commercial photography to simplify and broaden the treatment of a composition so as to obtain in the final effect the very elements sought by the portrait painter.

The General Fire Extinguisher is using soft-focal photography to accomplish quite a different purpose, namely, to portray with dramatic intensity the desolation which follows in the wake of a fire. Hardly a picture could be more illustrative of the resourcefulness required of the photographer in the matter of choosing the right models than certain of the scenes made use of by "Grinnell" to show the plight of the poor unfortunates whom fire has bereaved of a home. All of which brings us to one of the most interesting features in the entire business

"Movie" actors and actresses, according to one of the leaders in this new field of illustrative art, are rarely as good at a still-life picture as people who have never posed at all. The former have accustomed themselves to express

a series of emotions consecutively and always in action. To catch and hold a fleeting emotion is something they are not called upon to do, and the very fact that the motion picture permits of and demands a certain amount of exaggeration works against their success in still-life posing.



A SEMI-SILHOUETTE IN WHICH THE PRODUCT IS SUB-ORDINATED, BUT SHOWN IN ARTISTIC AND HARMONIOUS SURROUNDINGS

The people who express themselves best, on the contrary, are those who, though they may never have acted at all, have run the gamut of life's emotions and know from hard experience what sorrow, dejection, tragedy and despair may mean to the human heart.

These people are to be found in plenty of places, Heaven knows, and one of the tasks of the modern commercial photographer, in rivalry with the commercial artist, is to hunt out from that school of expression known as life such actors

as have lived their parts.

Of the tricks that are employed to produce some of the scenic effects that we marvel at, a book could be written—and probably has been. One studio that the writer visited boasted for some of its fantasies a group of tiny toadstools the lids of which were originally delicious

pancakes supplied by Mr. Childs. Having been suffered to go uneaten, to wither and to curl up, they were planted on plaster stems, photographed and subsequently, as enlarged reproductions, made out finely for a faerie garden party!

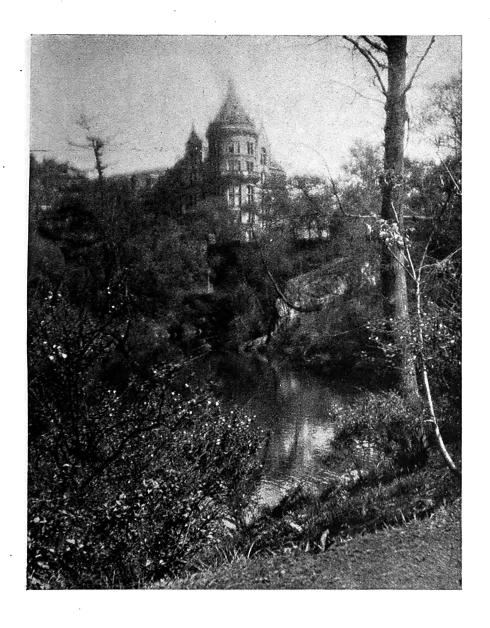
Your Babylonian temple, chances are, is made out of linoleum. The attic in which the father is teaching the young idea how to shoot is a little toy structure about a foot high. Enlargements bring it up to a size on which the life-size figures can be superimposed. The flame in the fire scene? Simply the blowing of an electric fan on loosely hung chiffon. The crinkly glass in the London stage coach? Tissue The earth, moon and stars in the ethereal scene? Painted rubber balls hung from wires, with Saturn (the prize exhibit) a rubber ball cut in half and glued on a piece of glass. The brilliant topknot worn by the Indian chief, every feather sharply outlined? There's an electric bulb that's hiding among the auills!

And so it goes! The photographer nowadays, to be successful at this latest turn in photographic art, must be not merely a camera expert but past master in the school of illustration. He must know how to select his actors, how to stage-manage his scenes, and finally know how to bring to the photograph the artistic touches of brush and crayon that will complete this novel blending of graphic arts.

The future of soft-focal photography in advertising? Problematic. Like most of us, the average manufacturer admires for other people what he fails to recommend for himself! It takes courage to subdue your product (which you're so proud of you'd like to run full size) to a degree where its outlines are indistinct and it occupies no unusual place in the

whole ensemble.

—Yet there are those who believe that this is not only good art, but also good advertising!



"MÜSEUM OF NATURAL HISTORY" By FLOYD VAIL, F.R.P.S. NEW YORK



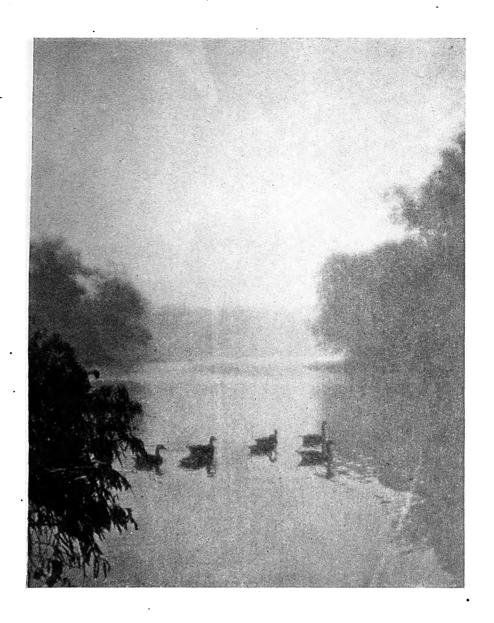




HOMEWARDS"
By FLOYD VAIL, F.R.P.S.
NEW YORK



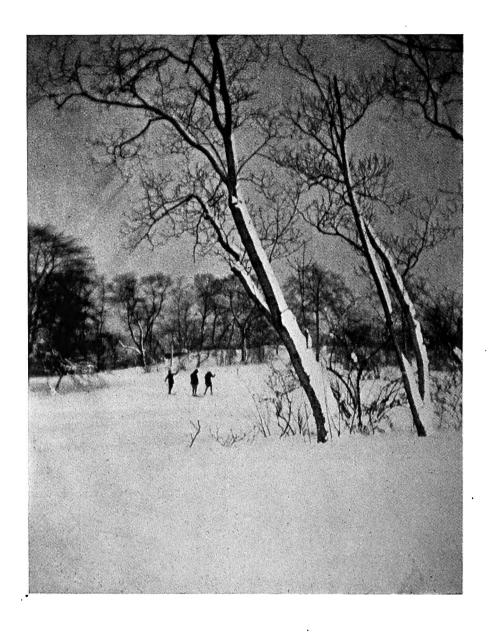




"FADING LIGHT"
BY FLOYD VAIL, F.R.P.S.
NEW YORK







"TWELVE BELOW"

BY FLOYD VAIL, F.R.P.S.

NEW YORK





"MORNING"

BY FLOYD VAIL, F.R.P.S., NEW YORK



"AUTUMN HAZE"

BY FLOYD VAIL, F.R.P.S., NEW YORK



WINTER SUNSHINE" By FLOYD VAIL, F.R.P.S. NEW YORK





AS TO SELLING PRICES

7HAT shall be the selling price of his photographs? is the most important question the professional is called upon to answer today. Various issues are raised, and so many considerations have to be met and settled that a right or wrong decision is vital in determining the success or non-success of a business. Should the prices fixed upon be too high, competitors will step in and seriously lower the demand for the higher-priced photograph; should they be too low, the status of the business will be reduced, the better class of customers bestowing their patronage on a In both cases the business will

suffer a falling-away of clients.
Whatever kind of work is done, there exists a close relationship between the quality of the photograph and the price it will command. The general public may not be expert judges of portraiture, of artistic merit, or technical finish, yet, by some means, they invariably for n a correct estimate of the qualities of a photograph and the abilities of the photographer. The best work is always recognized as such; it secures a reputation and the consequent patronage. In most communities clients can be found who will support the man capable of giving them high-class productions, and are satisfied to pay good prices, simply for the name of the producer, as the hallmark of superiority. Having this name, the photographer may almost fix his own

prices, quite independent of what are the general rates in the locality. Once in possession of a name for superior work, it is essential that the reputation be sustained, and prices may then be fixed more on a knowledge of the social status of clients than in reference to the competition rate and the charges of other photographers. High-class portraits will always be sought after; they are obviously a luxury, and being comparatively rare they secure fancy prices; they advertise themselves, sitters are attracted from long distances, and the business ceases to be a purely local one. For these reasons, superfine work must always stand alone, the price being excessive, or, at least, very much in advance of the usual rates.

Beyond the field of work which depends for sale on quality alone, artistic taste, originality, and technical finish combined, there remains an opening for that which is supplied to meet a demand. There exists a permanent need for work of general excellence, supplied at rates that are not beyond the resources of intending purchasers, and hence the man who can meet this call at the lowest prices will secure the largest amount of patronage. Such prices are regulated entirely by competition of quality against price. If a locality is supplied by a photographer doing a certain quality of work, it will be useless for a competitor to ask higher prices for work of no better quality, or lower prices for work which is inferior. To attract cus-

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tom, the portraits must be of better quality, supplied at the same or cheaper prices. To supply at a cheaper rate is, however, a mistaken policy, because it lowers the general rate; prices fall all around, and every photographer in the locality feels the effects—the competitor who commenced it in common with all To start a new business in a others. town hoping for custom on a reduction of prices is an error of judgment; it may succeed for a time, but, in the end, it must result in a general depression of prices. The only way to successfully compete with others, and to keep a business together, is to improve the quality of work and raise the price.

High prices are, in every instance, advantageous to the photographer. Photographs are, for business purposes, works of art; they cannot be classed with sugar or coal, as things people must have —necessaries, in short—and the price is not, like sugar or coal, fixed in the market to a large extent by the buyers. Skill enters largely into the production of photographs; it controls the price more than the cost of material or manufacture. The photographer has always to find a value for the skill he has displayed; if he puts this too low he degrades his status by under-valuing his abilities, and receives his profits, not on skill, but on cost of materials. By making skill the standard of value, the photographer receives his returns from that which yields the largest percentage of profit, and makes them independent of materials and cost of production, from which his profits can never be very large. In settling his prices, the photographer must always take into account his training, the years he has spent in perfecting himself in his profession, rather than the bare cost of materials, etc., required in producing his work. Like the artist, he must charge for skill, and not merely to make a profit on the cost of paint and canvas. We thus see that the status of photographers controls greatly the prices of portraits; the higher the status of a photographer, the better able is he to demand, and obtain, a high price for his productions.

Beside this, he deals mainly with persons who are purchasing luxuries; the

price paid by them will not interfere with or cause them to curtail their ordinary expenditure; hence, the photographer is dealing with clients who can afford to pay on a higher scale than could be expected for necessary articles. It is also generally overlooked that the photographer is not supplying a constant demand; his customers are mainly casual, and it is not to be supposed that a business of this nature can regulate its selling prices on the same lines as those which supply a daily or regular need.

The photographer who reckons the cost of material, wages, and indirect expenses, etc., and then allows over and above this a charge of 10 or 20 per cent. for profit, and puts his prices in agreement with the final figures, will soon find that it is impossible to carry on a business on these terms. Prices must be put down to give quite 33 or 50 per cent. profit above cost of material, wages, and indirect expenses, otherwise a deficit will occur, arising from the fluctuating and casual nature of the trade in photographs. Even to deal in quantities at low rates does not yield a profitable return, because the market is not yet extensive enough. Millions of photographs must be supplied to make it pay, and such a demand is not yet reached. The intrinsic worth of a dozen portraits cannot be made the standard for regulating the selling price. The skill of the photographer, slack seasons, difficulty with help, advanced cost of materials, the fluctuating demand, the fact that the article is a luxury, and the first to feel a depression in trade—all these must be allowed for. From these various reasons, we conclude that the public are by no means overcharged for photographs, and that professionals would only be doing justice to themselves if present rates were advanced 25 per cent. all around.

WHY SOME STUDIO ADVERTIS-ING FAILS

THE importance that has lately been given to the study of business conditions and matters of studio publicity, both by photographic conventions

and by the photographic press in this country and abroad, means a good deal for the future of photography. It indicates clearly that the men who view photographic conditions from a point that enables them to cover a broad field are beginning to realize that something more than mere technical skill is necessary to build up a successful photographic business. It shows beyond a question that thinking men in the craft realize the necessity of doing something more than merely making pictures of those who come to the studio for them. They are beginning to understand that a definite and systemic campaign of publicity is necessary to increase the business of the studio, and the conditions further show that many of them are putting this belief into practice.

Viewing the subject as we do, however, it is very interesting to note the way the man who has never advertised sometimes makes his start in the field of publicity. He seems to consider it a very serious experiment and one which is doubtful of results. In these cases it almost invariably happens that by his very uncertainty and failure to grasp the condition, he defeats the purpose of the plan before it is brought to a state of productiveness. In other words, advertising matter is often prepared and delivered to the photographer on the assumption that it is to be sent out at a given time to cover a given field and to carry certain arguments that are pertinent only to the occasion for which it is written. On the first blush of enthusiasm following its receipt, it may happen that onefourth or possibly one-half the matter is mailed with a certain degree of promptness and begins to do its work. It almost as often occurs, however, that this is about all that ever goes into the mail, and this is the main reason why a great many who imagine that they have tried the effectiveness of advertising fail to obtain proper returns from their outlay. The reasons for this failure in mailing the matter prepared are various. photographer is not accustomed to handling matter of this sort, and the folding, enclosing, sealing, and stamping of any considerable amount of matter blocks up the routine work of the studio.

Other duties find their way ahead of it and the circularizing is gradually laid aside, until in a few days it is conveniently forgotten and a large portion of the printed matter finds lodgment behind the counter, under the desk or on a shelf, so far out of the way as to be practically lost until brought to light by some special inquiry in the later months.

We are personally aware of several cases in which just this operation has taken place. In every such case the socalled advertiser has expressed his disappointment at the results of his advertising campaign. Is this to be wondered at, under such conditions? What is the best and surest way of avoiding its repetition in other cases? First of all, a still higher appreciation of the importance of advertising in itself, and next a keener understanding of the fact that advertising is just as much a part of a successful business as the production of good work with which to support it. When this is more fully realized an advertising campaign will not be undertaken except with the determination to see that it is carried to its full completion. This can only be accomplished by circularizing at a seasonable time and in a seasonable manner the entire list arranged for.

Once the plan is started, nothing should be allowed to interfere with its proper carrying out until the entire matter has been mailed and followed up at regular intervals with other matter bearing logically upon the first. If the studio is not equipped with help sufficient to put this plan into operation and to carry it promptly through to a successful end, it is better not to attempt the performance of the detail work at all. Rather let it be done by the people who prepare and print the matter. Little difficulty will be found in arranging with any modern advertising concern to undertake the entire work of printing, enclosing, sealing, and even stamping the advertising matter and addressing it to the list of names supplied by the advertiser. The cost in dollars and cents will be a little more perhaps than if the work is done by the studio help, but the returns will more than warrant the difference in price. Where such a plan is followed, the advertising matter

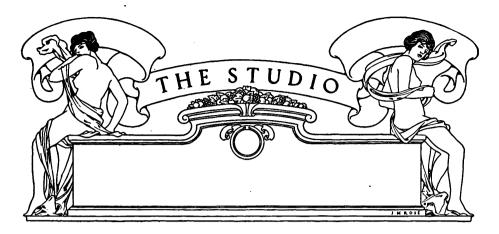
is bound to get into the mail and to do its work effectively. Under such an arrangement, the advertiser has only to prepare his list, and, before mailing, to check the count of matter delivered to him. The folly of paying for advertising matter, whether it be circulars, booklets, form letters, or what-not, and then allowing it to remain inactive, needs hardly to be pointed out, and yet it is no uncommon thing for this to be done and even to be repeated in some studios.

The business photographer who has exposed a half-dozen plates upon a certain sitter and has secured, say, four good negatives, would hardly feel himself warranted in submitting for approval proofs from only two. He would see the possibility of securing orders for finished work from the proofs of all four, and, if they were good, would invariably submit them to his patron. Is the matter any different when it comes to the subject under discussion? Not at all. every circular prepared there is a possibility of an order, the possibility of a new customer who may be a continuing customer, and whose work once brought into the studio may run through a series of years. Is there any reason, then, why only half the advertising matter should be utilized and the balance neglected? Failure to utilize it not only means a waste of money in its production, but the very fact of having a portion of the matter stowed away unused produces a more or less demoralizing effect upon the studio help under whose eye it comes from time to time. It is in itself an evidence of poor business management and money expended to no purpose, an indication of carelessness that must tend to

weaken the confidence of the employe in the business acumen and shrewdness of the employer. It were better far that only half the matter had been prepared and that half faithfully mailed and regularly followed up. It is almost an axiom in the business world today that a comparatively small list, regularly circularized and followed up with several reminders during a given period, constitutes far better advertising than the mailing of a single announcement of any kind to a much larger list. If this is so, and experience proves conclusively, there is every reason for the man who spends a given amount for publicity of any kind to make sure that his matter is mailed promptly and at the right time, that it goes to the entire list prepared for it, and that nothing is allowed to interfere with the thorough completion of the plan decided upon in the beginning.

The photographer in arranging his subject for a sitting has in mind, or always should have, a certain definite scheme of composition, and toward the carrying out of this scheme pose, lighting, and accessories each must play its own harmonious part. So, also, in the field of publicity. A plan of campaign once arranged, and after careful and mature deliberation decided upon, should be carried out to the letter. No single step should be overlooked or omitted. Above all, let it be remembered that no matter what the advertising matter may be, no matter what its cost or character, it cannot be expected to perform its mission if left to rot and to gather dust upon the shelves of the studio store-room. Think this over. Next month we shall have more to say on just how to go about it.





PRACTICAL PAPERS ON STUDIO WORK AND METHODS

Home Portraiture

Work which comes frequently to some photographers and only at long intervals to others is that of taking portraits at the sitter's own home. Some firms specialize in it to the extent of sending operators long distances, poaching upon the territory of the local man. There is no more remunerative class of work than this if properly managed, if the prints are of good quality, and yet many photographers fight shy of it, and these, yet many pnotographers fight shy of it, and these, it is to be feared, are generally those who bungle the job. With regard to terms, these are largely governed by local conditions and the prices obtained at any particular studio, so that I will do no more than suggest that no additional fee be charged for "going out." One does not make a charge for going out to take a base a base as charge for going out to take a house, a horse, or a dog, and there is therefore no justification for making a charge if the model happens to be a human being. I recommend, however, that an order for a decent amount be secured, say, at least for a dozen of the highest class of cabinets, as a condition of the special visit. The fact that no additional charge is made will often induce a delicate or infirm person to be taken at once, instead of postponing the matter on account of the weather or other cause, with the possible result of the order being lost through death or the action of a more enterprising artist. It is an excellent thing, from a business point of view, to secure the entrée to as many good houses as possible, for, with a little tact, it is easy to obtain orders for views of the home interior and exterior, and often of horses, dogs and other domestic

To make home portraiture easy and successful the outfit should be carefully chosen. The old way was to put the studio camera and stand in a cab and to trust to finding a dark room in which to fill in the plates. This is not a fancy picture. Years ago I did it many times for a first-class firm, and I believe many do it still. The latest idea is to use a reflex camera—which has its advantages—but, on the whole, I prefer a stand camera, which is not only more adaptable as regards rise, swings, and the use of different

lenses, but impresses the sitters with the idea that the work is being done properly, and that they are not being "snapped" with a portable camera, like Cousin Jim uses. Personally, I prefer a light parallel-bellows camera for whole-plates, fitted with a 12-inch f/5.6 lens. I also carry a Dallmeyer 2B portrait lens, which is useful for children or in very badly lighted rooms. The shutter is fixed inside the camera. Usually six slides are carried, filled with such sized plates as the order calls for. It is, however, a good plan to have a couple of whole-plates in one of the slides, in case there is not sufficient room to get in the desired amount of the figure, although the order may be for cabinets only. The 2B, however, will give a three-quarter figure in quite a small room. The stand is an ordinary three-fold tripod, but rather heavy, and provided with the folding wooden base so often described. This latter is a very useful addition, as not only are the feelings of the housewife relieved when she sees that it is not proposed to stick spikes into her rugs and carpets, but it permits of the camera being moved by sliding, instead of lifting, thus saving much time and labor.

Sometimes it is desirable to carry a small background, best a double-sided one of light and very dark gray, about 5 feet by 4 feet, upon two light rollers; it does not weigh much and is easily carried. A piece of calico to serve as a reflector is also useful, but if more impedimenta are not objected to, one of the Kodak portable reflectors may be substituted with advantage.

may be substituted with advantage.

Now we come to the most important part of the business—the placing and lighting of the sitter. In rooms which are lighted by only one window the choice of position is limited, unless the window is unusually large and high. With small windows it is necessary to place the sitter close to the window to ensure the light falling at the proper angle, which should be as nearly as possible the orthodox 45 degrees. It is surprising how nearly studio lighting may be approximated to if this be done. One important preliminary is to cover the lower part of the light with opaque material, and if the outside light is very

strong, the upper part should be covered with a translucent fabric, nainsook for choice. Butter muslin is sometimes used, but it is too open in texture for direct sunlight. In practice I find it convenient to sew the two pieces of stuff together, the upper half being a piece of nainsook about 4 feet wide and 5 feet to 6 feet long, and the lower black or dark-green sateen, the same width and about 4 feet long; this allows for windows which go down to the floor. This curtain is easily fixed in position with three or four push pins, any surplus length at the top being closely folded or rolled and pinned through. In a dull light the white half may be folded down behind the dark part and the clear glass used.

the dark part and the clear glass used.

As the conditions do not vary greatly in this class of work, the inexperienced photographer will do well to make a few exposures in an ordinary room at home and note upon the prints the positions in which the camera and sitter were placed to get the different effects; some will probably be good and more probably some will be bad, and, by selecting the more successful ones, he will find out the best way of working. For ordinary three-quarter lighting the sitter must be placed about two feet back from the edge of the window and about three feet into the room. This distance will vary with the height of the window; if the room be very lofty, the sitter may come further in and still be well lighted. Only in very lofty rooms should full lengths be attempted, otherwise the angle at which the light strikes the head is too small and the shadows of the features are flattened and the eyes filled with light. In some large houses, where the windows are 12 to 14 feet in height, studio effects are easily got. For plain lighting the camera should be kept as near to the window side of the room as possible, but for other effects it may be placed in many other positions. The so-called Rembrandt lighting is easily got in an ordinary room, more easily than in most studios. In this style the wall at one-side of the window carries the background. Here the dark gray ground will be very useful; the sitter looks straight across the light, which should give a broad line of light down the profile. By turning the head, a little light may be allowed to fall on the cheek-bone, but this is a matter of taste. The shadow side of the face which is turned to the lens should be lighted up by the reflector, which must be near the camera; in fact, it is sometimes an advantage to cut a hole in the reflector for the lens to look through.

There are great possibilities in the use of an ordinary looking-glass, especially in small rooms and when photographing invalids in bed, as by its aid the sitter may turn his face toward the window and still present the lighted side of it to the camera. In the very difficult case of a sitter in bed in a small room, the mirror may be so placed as to enable the photographer to work through the doorway. It should be remembered, as far as the working distance is concerned, that this is made up of the distance from sitter to mirror, plus the distance from lens to mirror, so that in a room where it is only possible to get three feet between lens and sitter by the use of the mirror, the working distance may be double or more. It must not be forgotten that negatives so taken are laterally inverted—that is to say,

that if printed in the ordinary way the hair will be parted on the wrong side; in fact, the image will be as seen in the mirror. To overcome this the prints may be printed in the enlarger with the glass side to the lens, or if portrait films be used, simply by printing from the back. Some objections to the use of the mirror may be raised upon the ground that there is the possibility of getting a double outline of the image, and this, of course, would occur if the mirror and lens axis were at an angle of, say, 45 degrees with each other; but when the lens and mirror are at right angles to each other there is no danger of this defect appearing

defect appearing.

The scope of home portraiture may be greatly extended by the use of artificial light, and I look forward to the time when the nitrogen-filled or half-watt lamps will have entirely displaced the ordinary vacuum (?) type. We shall then be able to work where we like in the room and get fire-side and card-table groups as easily as in the studio. Meanwhile we must rely upon magnesium, either in the form of the flash, or, as I prefer to use it for this class of work, in ribbon. Two feet of ribbon cut into four lengths and twisted into a torch give a light equal to an arc-lamp, and, if burned behind a diffuser, leave nothing to be desired in the way of lighting. There is no explosion, as with the mixed powders; no snowstorm, as when the pure metal powder is used; the flame is small, and there is no risk to draperies, the only precaution necessary being the provision of an old tea tray or mat to catch any burning ash which may drop from the torch. I always carry a roll of magnesium ribbon in my camera case with a bit of sandpaper to brighten it with and a wooden clip to hold it while burning. Do not try to light oxidized ribbon; it is a slow job; brighten it with the sandpaper and then it lights quickly and burns evenly.—B. J.

Practical Talks on Lenses

It is not wholly true to say that the perfection of modern portrait photography is primarily due to the perfection of the modern photographic lens. For a master of photographic art can take a portrait lens of the early days and produce with it a beautiful picture, whereas a photographer of the older school might be given the most modern of lenses and fail utterly to produce with it more than the most commonplace photograph.

It is in the knowledge of the capacity of his lens, and a thorough comprehension of what it will do, that the reason for modern photographic wizardy must be sought, rather than in the mechanical perfection of brass and glass. Also, to give credit where credit is due, to the manufacturer for producing materials, mediums and processes, which can interpret and make the most of the sunfixed images of the refractive medium

While it is perfectly true that a schoolboy of twelve can take a professional's camera and with it make a first-class portrait, providing the operator who knows how stands over him and directs his every move, it is equally true that the more knowledge one possesses of one's tools, the

better work one can do. Hence it is much to the point that every professional worker with lens and plate know not only how to use his tools, but why they give him the results that they do.

but why they give him the results that they do.

It is decidedly germane, then, to understand how a curved piece of glass produces an image, even though many a good photographer is satisfied with the fact that a lens does produce an image and starts his knowledge of photography

from, and not behind, that fact.

To understand the action of a lens it is essential to have some mental picture of what a ray of light may be. The physicist pictures it as a beam of vibrating ether, that peculiar weightless, tasteless, touchless, imponderable something which we suppose to fill all space and permeate all matter. While nothing in the way of matter interposes any obstacle to the ether, so far as we know, certain kinds of matter interpose obstacles to the vibration of ether. All the familiar opaque substances—brick, wood, heavy paper, for instance—cut off the vibrations of the ether which we call light. Certain other substances do not stop these vibrations, but, though they permit them to continue, alter them to some extent.

It is this property which is made use of in the lens—we call it the power of refraction, or

bending.

It is not difficult to understand if we picture a light ray as having its vibrations at right angles to the direction of the beam. Let us liken such a light ray for a moment to a solid rank of fifty soldiers marching down the parade ground. The captain gives an order to wheel to the oblique. In a moment the line of men is marching diagonally across the parade ground. What happened? The men on the extreme end slowed up, those further from the end slowed up also, but

not so much, and so on.

Something very similar happens when the light ray strikes a transparent substance, such as a lens, and at an angle. The part of the light ray which enters the lens first is slowed up, retarded, held back, so that when the other part of the light ray—the other end of the rank of men—enters the lens, the direction of the light ray has been changed. The scientist says it has been refracted or bent. But a light ray does not merely enter a lens and stay there-it comes out the other side. In coming out, the reverse of the process just described takes place. The part of the light ray to get out first, speeds up—the line of men wheels around—and when the rest of the "front rank" of the vibrations of the light ray gets out, it has resumed the same direction it had when it entered. This is true when the glass which the light ray enters has straight and parallel sides, such as a window glass. The only change of directions which such glass makes in the light ray is to shift it bodily a little to one side.

But if the glass has not parallel sides, then the direction of the ray leaving and the direction of the ray entering are no longer parallel. The prism bending a ray of light around a corner, is a familiar example, although somewhat complicated for demonstration purposes by the fact that it separates light into its several parts at

the same time.

An ordinary convex lens—a reading glass—(which form was the first of photographic lenses), is nothing more than two prisms placed base to base, and rounded over the angles, instead of left with flat faces. Light rays entering it are bent or refracted inward toward its center, a little on entering, a little on leaving. As the lens is round and has its greatest thickness in the center, all the light rays which enter it from anywhere are bent, or refracted toward a common center. If a screen, ground glass, for instance, be placed at the right distance behind the lens to allow all the refracted light rays to meet it at the same time they meet and cross each other—the position we know as being "in focus"—the image becomes visible, and is fairly clean-cut and sharp.

But in examining that image we find that only the object which is nearly in front of the center of the lens, and which is radiating light rays to strike the lens, is really distinct. If three candles, for instance, are set up on a table in a straight line, and we "focus" a plain reading glass upon them, by means of a camera, only that candle which is about opposite the center of the lens will form a sharp image. The other two will be somewhat distorted, blurred, curved and malformed, in their images. Also, a nimbus of color —a sort of rainbow-like fringe—will be visible about these outside candles. If we take a piece of cardboard, and cut in it a small hole, say as big as a lead pencil, and place this hole opposite the center of the lens, we find that we greatly improve the appearance of the images of the outside candles, although, while much sharper they are by no means straight and rectilinear in the image as they are in fact. The smaller we make this hole-which corresponds to the familiar diaphragm of our common lenses—the better do the images of the outside candles appear. When we get it down to a pin-hole size, they are perfect. As a matter of interest, they will be just as perfect then if we take the lens away altogether and use the pin-hole alonebut that is another story altogether.

However, we observe that as we make our diaphragm smaller and our images sharper and better, we at the same time make them fainter—because we are continually decreasing the

volume of the light.

All these things were speedily discovered when photography first began to make demands upon the lens-maker, and immediately came the need for some way in which a lens could yield a good, clear, clean-cut image even of objects at a distance from those in front of its center without sacrificing the volume of light necessary to affect a sensitive plate in a short interval. "Stopping down," while curing the evils of various distortions—"aberrations," as the lens-maker calls them—brought its own evil with it—loss of light.

To satisfy the demand, the lens-maker had first to determine just what it was that a plain convex lens did to the image it formed which it wasn't wanted to do. By means of various tests it was speedily discovered that a plain, single lens—an "uncorrected" lens to use the technical term—had several "aberrations," all of which affected the image, and, so it was thought at the time, all of them disadvantageously. Nowadays, we have learned to tame some of these wild aber-

rations and make them useful, but, at first, elimination was the only solution thought of.

The names given to these various aberrations by the scientists are "spherical aberration, curvilinear distortion, curvature of the field, chromatic aberration, astigmatism, coma, flare, diaphragm distortion, etc." Some can be cured entirely—others can be modified, still others can be minimized, so that they no longer trouble. Thus, astigmatism and chromatic aberration can be cured, to all practical purposes; curvature of the field can be so minimized over a certain amount of the plate or field of the lens as to be no longer evident, and flare, while it cannot ever be eliminated, can be so managed that its effect is a neglible quantity.

But before we examine into the ways in which these various aberrations are cured and avoided, and, later, how some of them can actually be made of service to the portraitist, it is necessary to learn how they are caused and why.

For detailed diagrams, and an exhaustive study, the reader is referred to any one of the many excellent books on lenses. Nothing further can be attempted here than a few words of definition of the various terms.

Chromatic aberration is that fault of a lens by which it fails to bring all colors of light to a focus at the same place. Different colors of light are different light rays, vibrating at different rates and so are differently refracted. The aberration of color shows in the screen as a colored haze about edges and in the picture as an absence of sharp focus.

Spherical aberration is caused by the use of spherical surfaces in lenses, which cannot be eliminated because of manufacturing and physical reasons, both. It is the inability of the lens to bend the marginal rays of light to an amount which will let them meet the more central rays of light at the same point. Its practical result is a blurred image, absence of brilliancy and failure to get a sharp focus even with a chromatically corrected lens.

Astignatism—which, in a photographic lens is entirely distinct from the same aberration of the human eye—concerns itself with the inability of the lens to focus horizontal and perpendicular lines at the same plane. Practically, it is little observable in lenses of short focus and small aperture, but in lenses of large aperture it is so great as to make one uncorrected for that aberration useless for almost all practical work.

Curvature of the field is a term self-explanatory—the various points of the image form themselves on a curved plane instead of a flat one—and our ground glass screen is flat. Its effect is to prohibit a sharp center and edge focus at the same time, but to permit either one at will.

Diaphragm distortion, or curvilinear distortion bends straight and horizontal lines out of the true direction. It is sometimes called barrel distortion because a banded cube photographs with a lens with this error to a barrel shape.

a lens with this error to a barrel shape.

Flare, or ghost is a spot of light appearing on the screen—it is caused by internal reflections in the lens.

Coma is an aberration of oblique rays producing blurred and radiating spots where should be points—it is of little interest to the portraitist.—
Photo Digest.

Proofs

Whatever may be the commercial advantages of employing untoned and unfixed P.O.P. prints as proofs, there are, we think, drawbacks which more than counterbalance them. The caution may be given, both personally and in writing, to examine the proofs only in weak light, yet the natural tendency of the public is to disregard this advice altogether. One may see a sitter being handed a batch of sensitive proofs in a reception-room to the accompaniment of the usual caution, and as often as not the proofs will be scrutinized in broad daylight as soon as they are taken out into the street. Very likely they will be brought back the next day with the complaint that the sitter's friends do not think that the portraits are good. In such circumstances as these it is common experience that a proof on bromide paper will evoke the opinion that a greatly improved result has been obtained. We think that the advisable course is to finish proofs roughly, either on P. O. P. or bromide, so that there is no chance of immediate fading. They may be defaced by other means, so as to defeat the purposes of unscrupulous people who may try to get something for nothing, but it requires to be recognized that a proof is examined not only by the sitter, but by others of the family, and that therefore is bound to be exposed to more light than an untoned and unfixed P. O. P. will stand.—B. J.

A Suitcase Motion-Picture Laboratory

THERE are times when the motion-picture man needs a small laboratory equipment that he can carry about, particularly when he is working in distant fields.

Heretofore, owing to lack of suitable equipment, it has been the general practice to send the undeveloped negative back to the home laboratory, where it could be developed in the regular way. This procedure, however, has a great disadvantage, namely, that the cameraman does not know whether his film is good or not, and by the time he receives word from the home laboratory, he may be too far away to "shoot" the scene or scenes over again, in the event of poor results the first time.

So it follows that there exists a considerable demand for a portable laboratory. It has remained for Ralph Stineman of Los Angeles, Cal.—a place where almost everyone is interested in moving pictures—to devise a motion-picture laboratory that fits in a suitcase. Briefly, Mr. Stineman's apparatus consists of a simple printer of the continuous action design, a set of three flat pans, and a flat rack for holding the film.

The negative or positive film is wound on the flat rack, which is provided with a spirally-wound strip which serves to hold the film in place. This flat rack can be placed in the developer, fixer, and rinser in due turn. As for the printing-machine, it is simple and hand-operated, a heavy fly-wheel providing a uniform rate of movement.



Photography in the War

ONE of the most fascinating accounts of the use of photography in the war has been written by Mr. Spencer Leigh Hughes, M. P. He tells how the British War Office and Admiralty were up till February, 1915, absolutely skeptic and indifferent, but at that time some photographs of the enemy's position were taken "with a miserable makeshift camera, but the results made the authorities sit up and take notice. All sorts of unsuspected things were revealed, such as unknown trenches, while sham trenches were shown to be shams. The staff got busy, the general vowed he could capture the enemy's position next day, and he did so with complete success, taking many prisoners without one casualty on our side."

This eye-opener resulted in two officers leaving the front and reaching London on a Friday and within three days a real aviation camera was built by the Thornton-Picard Co.

A further improvement was the Mark III Hythe gun camera, which looked exactly like a Lewis machine gun, but which recorded the hits and misses of a gunner photographically. at once led to great advances in gun aiming, and "those who are capable of forming a definite opinion that is worth anything on this matter declare that this Mark III gun camera was the main factor in the supremacy of our men in the air, and for their absolute dominance over the enemy.

M. L. Clerc gives three valuable papers on estimation of the horizon line, the height of objects by their cast shadows in aërial photography, and the limit of admissible angling.—B. J., 1919, pp.

293-299.

The Focal-plane Shutter

MM. EQUER and Cousin publish speed tests of a focal-plane shutter of a rigid type with fixed slit and variable speed, and while it is useless to give full details and their mathematical calculations, their conclusions, which follow, are interesting: (1) The speeds are very different, other things being equal, accordingly as the apparatus is held one way or the other (with slit vertical or horizontal—E. J. W.), especially when the spring tension is small. The effect of gravity is proportionately greater as the spring tension is diminished. (2) The variation in the exposures obtained at opposite edges of the plate is considerable—as much as in the ratio of 1:2. -Bull. Soc. Franc., B. J., 1919, p. 280.

Drying with Spirit

M. L. CLERC contributes an interesting paper to the Bulletin of the French Photographic Society on this subject, and comes to the conclusion that the white deposit which is often seen on negatives

dried by spirit is due to the precipitation of lime salts in the gelatin, and recommends immersing the negatives or prints in a 1 per cent. solution of hydrochloric acid for a short time before immersion in the spirit, obviously to convert the lime carbonate into the soluble chloride. He also suggests the use of two alcohol baths, as this hastens drying and is more economical of alcohol.

—B. J., 1919, p. 260. [The white deposit formed on drying with alcohol has been the subject of investigation both by Namias and Lueppo-Cramer, and the latter stated that the white appearance was due to the alcohol abstrac-ting the water from the cell walls of the gelatin more than from the interlacing channels, and he stated further that methyl alcohol was less likely to give this whiteness than ethyl alcohol.
—E. J. W.]

Sulphur Toning

RAJAR, a well-known firm of papermakers in England, recommend the following method of obtaining cold sepia tones without any trace of yellow.

The fixed and washed prints are immersed for

five minutes in

Liquid ammonia sulphide . 40 oz.

or sodium sulphide may be used, though the ammonia compound is more stable. The prints are then well washed, bleached as usual and

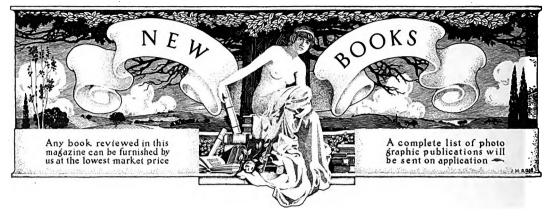
again immersed in the sulphide bath.

Another method of securing fine tones is to bleach the prints in the usual ferricyanide-bromide solution and wash well. Then immersing the prints in a weak M. Q. developer, ordinary developer diluted with five times its bulk of water, and carrying the development to the desired extent: Warm-brown to brown-black tones are thus obtained. The prints are then rinsed and sulphided as usual.—B. J., 1919, p. 338.

Platinum Toning of Printing-out Paper

B. Ehrenberg, Elbing. Ger. Pat. 310,445, 17. 12.16.

A DEEP print is made and is bleached in a 15 per cent. salt solution, preferably after washing out the chloride. It is then placed in a preliminary bath of ammonia, or an alkaline ammonium salt, toned in a gold bath, and finally fixed in a concentrated sodium thiosulphate bath (at least 15 per cent.) until the blue and red tone of the gold is destroyed. A pure platinum tone of great brilliance, even with thin negatives, is thus obtained without the use of platinum. The best results are attained by using a buffcolored paper ("chamoiscelloidin papier") as otherwise the ground color of the paper inter-feres somewhat with the purity of the platinum tone.



"Elementary Photographic Chemistry"

PHOTOGRAPHY is so essentially a chemical process that every photographer today should have an interest in the chemicals which he uses and in the reactions which they undergo.

This book meets a ready response to a demand for a simple account of photographic chemistry, in a form suitable for the practical photographer.

No attempt has been made to give any full account of chemical theory, for which text-books on chemistry should be consulted. In Chapter I a statement is given only of the chemistry which is necessary to an understanding of the remainder of the book. In the same way reference should be made to photographic text-books for an account of photographic practice, this book dealing only with photographic chemistry and not with practical photography.

In order to give the information about photographic chemicals which is necessary for their intelligent use an account of the properties of each of the more important chemicals is given in a separate paragraph, which is inserted in the section dealing with its use but is printed in a smaller, distinct type-face; to facilitate reference an index to the chemicals dealt with is given at the end of the book.

A valuable hand-book for every photographer. Copies can be had by applying to Eastman Kodak Company, Rochester, N. Y.

"Behind the Motion-Picture Screen"

How the Scenario Writer, Director, Cameraman, Scene Painter and Carpenter, Laboratory Man, Art Director, Property Man, Electrician, Projector Operator and Others Contribute Their Share of Work Toward the Realization of the Wonderful Photoplays of Today; and How the Motion Picture is Rapidly Extending into Many Fields Aside from that of Entertainment.

By Austin C. Lescarboura. Over 300 illustrations. \$3.50 net. Scientific American Publishing Company, New York

lishing Company, New York.

Here at last is the authoritative book of the screen. It takes the reader into that marvellous land where films are made and where the camera reigns supreme. Every step in the making of a photoplay is taken up in proper turn, from the planning and writing of the scenario to the pro-

jecting of the finished film on the screen in the picture theatre. Talking pictures, natural-color pictures, microscopic pictures and all phases of the motion picture are treated upon in due turn. In a word, a book revealing screen wonders in which will be found the answers to the thousandand-one questions forever occurring to motion-picture devotees. The author has endeavored to answer all questions in an authentic, comprehensive, yet highly entertaining manner. first half of the book deals with the production of motion pictures from the time the scenario writer conceives of the plot until the finished film is projected on the screen. The second half of the book deals with subjects apart from the production of conventional photoplays, aiming, as it does, to promote wider interest in cinematography by telling of its vast possibilities in fields other than mere entertainment.

Every important phase of motion pictures has been touched upon, more or less, depending upon its relative value to the entire art. Technicalities have consistently been avoided. It has been the aim to lay a general foundation for cinematographic knowledge, so that the reader, after mastering these pages, can turn to the more exhaustive works which have heretofore been barred to him as a layman.

In explaining special forms of motion pictures, the author we find has made use of certain systems. It is not to be assumed that these are recommended or selected solely on their merits from among all other similar systems. Indeed, they have been selected either because their general characteristics serve to make them typical of motion pictures of that particular category, or because their operation lends itself best to simple explanation.

For the film devotee of a more serious turn of mind who would ask pertinent questions and expect understandable answers concerning what takes place behind the motion-picture screen, and who would be unable or unwilling to turn to the technical volumes with their formidable verbiage, this book will fulfil a long-felt want.

"Birds of Field, Forest and Park"

By ALBERT FIELD GILMORE. With illustrations. \$2.50 net. The Page Co., Boston, Mass.

This interesting book is in no sense a treatise on the science of ornithology, but the effort is made to reproduce the atmosphere of the natural home of the bird in field, forest and park, by describing the conditions under which each variety is found, and their usual surroundings, as well as their habits, plumage, songs, etc. About one hundred and fifty varieties are described, including those most common in eastern North America. The classification recognized by the American Orgital by the nized by the American Ornithological Union has been followed, as well as those purely technical terms that are unfamiliar to the lay-

The beautiful illustrations from photographs will be of special interest and value to all photographers of bird life.

"Alaska"

A DESCRIPTION of its Rivers, Mountains, Glaciers, Volcanoes, and Other Beautiful and Unusual Scenic Features and of the Rare Delights It Offers Travellers, Big Game Hunters, Mountain Climbers, Explorers; Its Towns and Pioneer Settlements; The Government Railroad and Mount McKinley National Park; Its Rich Resources; Its Openings for New Business Enterprises; Its Indians, Their Primitive Customs and Present Development; Its Romatic Early History When Russian, Spanish, and Other Nations Sought Its Wealth; the Gold Rush Days; Its Present Progress and Bright Future. With map and fifty-four full-page plates from photographs

photographs.

By AGNES RUSH BURR. Price \$4.00 net. The Page Co., Boston, Mass.

Of late years there has been an unusual interest and demand in this country for an adequate work on Alaska, the great treasure house way off in the northwest corner of our

Alaska is a land of beautiful scenery and of almost inexhaustible resources. It is a land with a romantic history, and a land of interesting people, whether these be the sturdy pioneers and their descendants with their tales of early days, the Indians, and the rapid progress they are making on their march toward civilization, or the prospector with pack on back on his tireless quest for gold.

It is a land also of many opportunities. In size, we are told, about one-fifth of the whole United States; in resources almost equal in variety to those of the entire country. Alaska as yet has but comparatively a small population and few industries. New business enterprises in almost countless number await the seeing eye and earnest hand of the shrewd business man and woman.

The author has presented the subject with a direct and delightful style, touching on every phase of this fascinating country, and the publishers have given us a volume replete with many illustrations from photographs, altogether making a volume of unusual interest and charm.

"Over Japan Way"

By ALFRED M. HITCHCOCK. Illustrated with photographs. Price, \$2.00 net. Henry Holt & Co., New York.

Any book that reveals to us the fascinating beauty of this wonderful land of flowers and country is always welcome. Mr. Hitchcock has here given us a very delightful account of his visit. There are numerous and faithful photographs which greatly add to the text and suggest possibilities and delights for all those fortunate enough to enjoy a similar experience.



VIEWS AND Reviews



Safeguarding Roll-Film Exposures

THERE have been so many inventions of late on the prevention of double exposure of roll-film, that in a short time it seems we might hope for some make of camera incorporating this feature. Such a device is absolutely necessary in most cases, because one of the most frequent mistakes made by the amateur photographer is to forget to turn the film, thereby making a second exposure on the first. Most of these inventions take the form of a locking device engaging with the film-winding mechanism in such a manner that, when the first exposure is made, the shutter is locked. To make another exposure the operator must turn the film key, thus bringing a fresh section of film into position and unlocking the shutter. Others merely indicate that the exposure has been made, and it is necessary for the operator to wind the film and then reset the indicator.

Making the Machine Gun Shoot Pictures in Place of Bullets

In casting about for a suitable method of training aviators in aërial marksmanship, it was the British who first introduced the so-called gun camera. This device in its early form was

simply a camera patterned after a Lewis gun, with a long lens barrel in place of the usual barrel. The gun camera was then a cumbersome contrivance, its operation did not simulate that of a genuine Lewis gun, it carried plates for twelve exposures only, and each exposure called

for a manual operation.

Then the United States entered the war, and among other things the matter of a satisfactory gun camera came up in due course. As a rush job, the British gun camera was not at all bad; but after a while the American camera designers came forth with an idea for making the gun camera a separate device that might be attached to any standard Lewis gun. In that manner, they pointed out, it would be possible for an airman to obtain more realistic training. Again more realism called for a camera that could make a hundred exposures at one loading, and, like the machine gun, could fire in "bursts" and continue firing automatically as long as the trigger was under pressure.

The gun camera in its perfected form weighs

only thirteen pounds in all, and has a lens barrel but eight inches long and two and a half inches in diameter. It is of metal construction throughout. The film magazine is oval shaped. It is fitted with a Lewis gun magazine lock, which serves to fasten the film magazine in place.

Soon after the gun camera was introduced arguments arose at the training fields as to which aviator first shot the other, when both showed hits on their film. This necessitated the introduction of some form of time indicator. At present the gun camera in photographing a hit also registers the time on the same image.

It was believed at first that the aiming of the gun camera would have to be done mechanically, and one had visions of intricate gears and other mechanism. But the problem of aiming was solved by a system of mirrors.

The gun camera is properly registered with relation to the sights of the machine gun to which it is attached by first sighting the machine gun on a point a definite distance away, and then moving the camera so that the point of the bisecting lines of the "graticule" fall exactly on the point where the gun was sighted. Suitable clamping members then insure the accuracy

In place of the explosive force of the usual cartridge, something had to be introduced in the gun camera for driving the mechanism. The designers in the present and latest model have made use of a spring, which is wound with a handle similar to that employed in winding phonograph motors. The spring is fastened directly to the shaft that turns the five-inch reel and through to the Geneva cross movement which causes the intermittent action of the shutter and film-shifting mechanism, each time the gun is fired. The film is standard motionpicture stock, and in the gun camera it travels from a spool in the small end of the magazine, past a light trap, where it is exposed, and thence to a reel five inches in diameter at the larger end of the magazine, where it is stored until developed. Each gun camera is ordinarily provided with three magazines, which may be loaded in daylight.

The "hits" are recorded on the motion-picture m. The crossed lines serve to indicate the accuracy of aim with relation to the airplane photographed; the white clock dial indicates the exact time even down to the second. A glass plate, called a "graticule," is interposed in the lens barrel at the focal plane of the lens, which means practically in contact with the film. The graticule carries the crossed lines and circle, which are photographed in each image recorded. The developed images serve to indicate whether a given "shot" would have proved vital or not in actual combat .- Scientific American.

The New "Specto-Focus-Hood"

THE old-time focussing cloth has long been a means of annoyance and trouble to every photographer. Now comes the ingenius device, the "Specto-Focus-Hood," which takes the place of the focussing cloth and enables the operator to see at once what with the focussing cloth would take quite a half-minute or more. This new focus hood is compact, quickly adjusted, and will fit any eyesight. The image on the ground-glass is enlarged and enables the operator to see the sharpness of the image at once. This hood is thoroughly practical, saves time, annoyance and eyesight, and is a decided improve-ment over the old cloth method. The Artograph Screen Co., of New York, are the agents and will gladly furnish further information.

Where We Stand in Color Photography

THE circumstances of the past four and a half years have necessarily been very unfavorable to progress in arts such as that of color photography, and therefore there may be many readers of these lines in distant parts of the world for whom, at the present time, the so-called "color plates, producing color 'transparencies, stand for what they understand by "color photography." But these screen-plates, the Autochrome and the Paget, admirable as they are, represent only a special form of a color photographic process, though certainly for the purposes of the ordinary photographer they are the chief materials for the making of photographs in natural colors. Hence some review of what has been done and of what may be done along other lines is of interest to many whose acquaintance with color processes is of comparatively recent date.

There is no need on this occasion to go back as far in the history of color photography as the processes chiefly due to the inventive and mechanical genius of Mr. F. E. Ives, now of New York, except to say that the optical color effects which were produced by his Kromskop and lantern Kromskop were probably as perfect renderings of color as have ever been produced. Yet beautiful as they were, public taste naturally asks for something more tangible than an image upon a lantern screen or the optical assemblage of three separate images in a viewing apparatus. The public wants, or thinks it wants, prints in color, and still nurses a qualified dissatisfaction that the results by the Autochrome and Paget processes are obtainable only as glass transparencies. Here, perhaps, a word may be said on the purely human element in the case. We need to

distinguish, in forming an estimate of the value of any process of color photography claiming to yield paper prints, between the requirements of the purely amateur photographer and of the people who would use such a method for commercial purposes such as portraiture, etc. amateur undoubtedly would welcome delight a color process, even one with imperfections if it involved no more delicate manipulation than that necessary in ordinary black and white photography. In the case of the professional maker of portraits, it is to be considered that at present he has at his command processes of coloring which in many cases are not expensive and which, moreover, possess the very greatest latitude, enabling him to produce results beyond the powers of a hard and fast color process and for commercial purposes more useful. In judging the results by any new color process the judg-ment must be entirely on their merits, and after elimination of any kudos attaching to them from the fact that they are made by purely photographic methods instead of by the skill of a colorist. One could perhaps sell color photographs for a little while as curiosities, but the experiment has been tried, with the result that the public was found to judge always by results and was not particularly concerned as to how

they are got.
When we review the methods which have been used for making actual color photographs on paper by the so-called subtractive processes, we see that a method capable of being reduced much more fully to a working system is necessary before any such process is likely to come into general use either by the professional or the amateur. No doubt many readers of this article have heard of color prints by the Sanger-Shepherd process, though few no doubt, unless they worked the process for themselves, have seen any. A process capable of very fine results, but calling for a degree of care and observance of detail beyond the inclination of the amateur in these hurried days and commercially too elaborate for the professional. Very much the same may be said of the making of three-color prints by the carbon process, which also, in expert hands, has yielded altogether beautiful results. In the form of the Raydex process, in which pigmentation is done according to the Ozobrome method, three-color carbon printing has obtained a measure of simplification, one element in which is that the printing is done in the first instance on bromide paper and does not require daylight at any stage. When we have mentioned these three processes, we have perhaps singled out those which yield beautiful three-color prints from the sets of color-sensation negatives, but which nevertheless are processes for the few. We should hardly be inclined to include Pinatype among them, for the reason that the best three-color prints by this process which we ever saw had a "dye-y" look. The process for the purposes of three-color printing may, at any rate, be said to be dead, if it was ever really alive.

On the other hand, within the past few years, progress has been made in giving a greater facility to these methods in which three-color images are assembled in register to form the print in natural colors. Mr. Ives has done much in

removing difficulties of manipulation by his invention of the Hichrome process, the development of which has no doubt been hindered by the disturbed condition of the world. Another experimenter, Mr. A. Hamburger, has contributed much experiment on these lines. His Polychromide process, which was for a time systematically worked in the making of portrait color prints, consisted in the assemblage of a yellow image produced by toning, a red carbon image and a blue image, again produced by chemical toning of a developed bromide print. Still more recently, as noted in this Supplement (April and May, 1919), he has worked out methods, designed in the first instance for the production of cinematograph color films, whereby a monochrome silver image is simultaneously bleached and caused to take up a pigment or dye. A simplification such as this will, as can be readily imagined, do much to reduce the making of composite color prints to a simple operation. Further developments by both these inventors should be watched by those who are interested in

this branch of the subject.

Even in such a general sketch as the present one mention should be made of the somewhat old and now almost obsolete process known as the "bleach-out," for which at one time or another great hopes have been entertained—chiefly, however, by the inventers. The principle of the process is, of course, that a mixture of three dyes, say red, yellow and blue, each separately bleached by light, is made so as to yield a black film. On exposure, any given dye is bleached by light, which it absorbs, with the result that theoretically a film constituted as just described should become red when exposed to red light, blue when exposed to blue, and so on. Unfortunately, the endless reactions of dyes upon each other and of the vehicle upon them, as well as the different effects of substances added to render them more sensitive, form a set of variable factors which make the process exceedingly complicated. The late Dr. J. H. Smith devoted half a lifetime to this process, and his work and many writings upon it may be said to have done no more than to show the very unpromising nature of color photography along these lines. It is to be remembered that for the bleachout process a positive (in colors) is obtained from a positive, on which account it was thought that the method offered the opportunity of reproduction on paper the beautiful effects produced on Autochrome plates. The best result of this kind, however, which we have ever seen was a shocking travesty of the quality of the original.

To turn to color screen-plates, the so-called "Color Plates" represented by the Autochrome and the Paget, we may be justified in thinking that so far as the plates themselves are concerned manufacture has become fairly stabilized, and the color worker who seeks either a plate for the making of a single transparency or one for the production of a number of duplicates is well provided for by the respective products of the Lumière and Paget companies. But what the amateur worker undoubtedly hankers after is a means for making from one or other of these color transparencies color prints on paper. far, no such process—or, at any rate, none worthy

of the transparencies themselves-has been offered them, but a process with this end in view was patented some six years ago by Messrs. specification was published in the B. J. November 6, 1914. The war, unfortunately, or perhaps one should say fortunately, has drawn Messrs. Rheinberg into the manufacture of optical munitions; but perhaps they will now have the opportunity to proceed with their process, the essential feature of which is the transfusion of minute color elements such as those on the colorscreen plate, through the agency of suitable chemical means, so as to form a textureless color print. This, again, is a development which, from the nature of the problem, cannot be rapid, but is nevertheless one which will be watched with interest.—B. J.

A New Departure in Photomicrography

THE use of a new type of lamp¹ in photography has yielded interesting results which have been described in American journals.2 A new type of rheostat, described here for the first time, permits of such latitude in the control of light intensity as to render the apparatus much more valuable than

at first anticipated.

The lamp consists of a 1-inch colorless or blue (daylight) glass tube containing a single tungsten filament. The tube is bent into a circle of 35 mm. outside diameter. While the lamp is a 0.7 ampère, 9 volt unit, with a life of about 900 hours, it is operated at 0.9 ampère and 13 volts for visual work, under which conditions its life is about 150 hours—a long one for microscopic work. For photographing it is worked at 1.02 ampère and 18 volts; under these conditions the life is about three and a half hours. Exposures are made in from ten to forty seconds, usually about fifteen seconds, so that the cost, including time required for focussing, would not be more than one cent per plate. The lamp is silvered a little more than half-way round. A plane passing through the edges of the reflector is inclined toward the stage at an angle of about 45 degrees. This reflects light conically from the circular source to the portion of the object under examination.

The holder contains three iris-like fingers which clamp it to the objective. These are actuated by springs which are controlled by thumb pieces so as to clamp the holder to any objective. If the lamp is to be maintained at a constant distance from the object a tube may be clamped to the stage of the microscope, the lamp attached to the tube, and the objective raised or lowered inside the tube. It if should prove desirable to cut off the light from one-half of the circular source, a disk may be placed under a portion of the lamp. The disk can be fitted with

fingers which slip into the lamp.

The Rheostat. The new rheostat which is built for 110-volt or 220-volt lighting circuits, has nine connecting posts so that the lamp may receive the proper current for deviations from the normal line voltage. It is equipped with a push switch for visual work and a spring contact for photographic work. The latter lies on a shunt circuit so that it may be operated alone or while

the push switch is on.

Photography. Objects to be photographed are placed on the stage in the usual way. The light intensity and quality are such that a camera without shutter or lenses may be attached to the tube of the microscope. With a 10 x eyepiece and 16 or 32 mm. objective an exposure of fifteen seconds is usually ample. The lamp travels with the objective, so that the height of the surface to be photographed, above the stage, is imma-

terial.

Most modern microscopes are equipped with vertical illuminators. The tube length is computed to include the vertical illuminator tube. If this is removed it is necessary to raise the collar to about the 176 mm. point to focus for a uniformly good image on the ground glass. Focusing may be facilitated by greasing the ground glass with vaseline, afterward rubbing it as dry

as possible. In metallographic work the plate appears almost like the positive printed from a negative taken with vertical light. This will necessitate a reinterpretation of the picture, but the wealth of detail visible in photographs taken by the new method justifies the step. Depth is shown which it is impossible to obtain with the vertical illuminator, and in slag pits which look black under vertical light, the slag content is visible by the

new method.

Light-absorbing surfaces which are almost invisible under vertical light display surprising detail under the new light. Paper, textiles, insulating materials, botanical specimens, ceramic materials, etc., when examined by the two methods furnish all the evidence necessary. In examining deep, hollow objects, like steel test dishes employed in the enamel industry, the light may be lowered into the object with the objective. It is impossible to use the vertical illuminator

for this purpose.
With the disk-type vertical illuminator one not only looks through the disk but also encounters transmitted rays. As the new illuminator surrounds the objective, only reflected rays pass into the microscope tube. The light is soft and

very little, if any, eyestrain results.

Successful results have been obtained with 8 to 60 mm. objectives combined with 5 to 12½ x eyepieces. The illuminator works well on binocular microscopes fitted with ordinary objectives. A holder or adapter is being designed for double objectives of elliptical cross-section. ments will be undertaken shortly to determine its value in oil-immersion work. There is a possibility that important developments may result with high-power objectives in the field of bacteriology by producing a sort of ultramicroscope

The advantages of the apparatus are that the lamp travels with the objective, the light adjustment necessary with most of the older illuminators is eliminated, and the whole process is simplified.—Alexander Silverman.

¹ U. S. Pat. 1,267,287; Canadian Pat. 185,283; Italian Pat. 48/485.

² Jour. Ind. Eng. Chem., 1917, ix, 971; 1918, x, 1013; Chem. and Met. Eng., 1918, xix, 508.



The WORKROOM

ONTAINING THE LATEST PROCESSES, FORMULAE AND APPLIANCES NEEDFUL IN THE ART OF PHOTOGRAPHY FOR THE OPERATOR & WORKER

Pitfalls in Copying The Choice of a Surface and Grade of Bromide Paper How to Measure your Stops The Restoration of Faded Prints Dry Mounting without Press or Tissue Rational Development An Easy Method of Silvering Mirrors Professional Photographic Methods An Ideal Lens Shade Ouinine Backing for Plates Photography in the Tropics Rendering Contrasts Using Inferior Papers Mounts and Mounting Development Papers and Desensitizers Photographic Printing on Wood Patent News Replies to Queries America's Optical Emancipation



THE WORKROOM

By the Head Operator



Pitfalls in Copying

No branch of photographic work calls for a sounder knowledge of the art than the copying of photographs, documents, pictures, and the like, and this is more especially the case when the work has to be done with such appliances as are usually found in an ordinary studio. As a rule the quality of the work so done is poor, although the operator himself does not realize it. Copying is to him an abomination, and he does not start on a job with the idea that he is going to get a first-rate result.

There are many points to be observed if the best possible result is aimed at, one of the most difficult problems being properly to estimate the actinic values of the image and its support respectively. If we take an old albumenized print made forty or fifty years ago, we shall probably find that it consists of a purplish image upon a yellow ground, varying from a deep cream to a full cheese color. Here the temptation is to under-expose, through fear of over-exposing the image, but it must be allowed that, no matter what happens, sufficient exposure must be given to allow the high-lights of the subject to develop up to a reasonable density. With experience it is possible to estimate exposures of such subjects with great accuracy, but the inexperienced copyist will do well to sacrifice a small plate in making a strip test, as is usully done in bromide printing. If only a quarter-plate be used upon a portion of a 12 x 10 subject it will suffice. four exposures of an inch wide may be made, and ratios of one, two, four, and eight times given. For the benefit of those not accustomed to strip exposures we may say that the best method is not to pull out the slide one inch at a time, but to open it fully and to push it in step by step. Thus, supposing that the shortest exposure likely to be of any use is estimated at ten seconds, we open the slide fully and give this exposure; then we cap the lens, push in the shutter so that one inch of the plate is covered (this may be arranged for any size of plate by making pencil lines upon the inner surface of the shutter), and giving a second exposure of ten seconds; successive exposures of twenty and forty seconds are made in the same way, great care being taken not to disturb the camera. We have now exposures of ten, twenty, forty, and eighty seconds upon the same plate, and these should be fully developed, no notice being taken of the appearance of the image until it is fixed. It will now be easy to deduce the proper exposure from the appearance of one or other of the sections. It may be that the strip with twenty seconds is a little too thin, and that with forty too dense; hence we should say that thirty seconds will give the best result. Or even the ten-second one may be too dense, or the eighty-second one too thin; in these cases the appearance of the image should give sufficient indication as to the reduction or increase of exposure which will be necessary.

Another point on which sufficient care is not exercised is the illumination of the surface. Many photographers think that it is only necessary to avoid reflections from the surface of salvsy prints and glass-covered pictures, but this is not the case. Any gelatin-coated paper has sufficient surface reflection to degrade the shadows if improperly lighted, and it may here be said that much may be done to cut out these surface reflections by using a color-sensitive plate and a yellow screen, even if the nature of the subject does not seem to call for it. By reducing the effect of the surface-reflections the yellow screen also helps to remove the great bogey of the copying "grain." Most copies show a great deal more of the texture of the original paper than was apparent to the eye, and this can only be overcome by proper lighting. The process engraver has an ideal method of illuminating his originals by using two arc lamps, one on either side of the original, and by this means he eliminates the little shadows which are the cause of the trouble. It is a curious fact that many copies are spoilt by "grain" through the use of a large camera and a short-focus lens. The effect of these is to cut off nearly all the front light which would fall upon the original, and to leave only side light to do the work. It is a good exercise to take a print on lingrain paper and to make a negative in which the grain is hardly visible. There is one kind of grain which cannot be eliminated, viz., that caused by fine cracks in the albumen surface which have got filled in with dirt. All that can be done with these is to copy with a soft-focus lens or to interpose a thickness or two of thin celluloid between the negative and paper when printing.

The development of copy negatives requires to be done rather differently from ordinary direct portrait work. With a copy the image appears practically even all over the plate at the start, and not in stages, as in portraits, where the white collar, the face and hands, and the clothing, appear at appreciable intervals after each other. With a copy of the same subject the image would come up on a level, and the operator is apt to think that the plate is over-exposed, and to commit the error of stopping before proper density is obtained. This appearance is due to the slight surface-reflections we have already mentioned. In the original the black shadows of the coat are representations of black cloth on which no light is falling, in the copy they are representations of a piece of paper covered with a layer of dark silver particles, the surfaces of which receive exactly as much light as the high-lights of the

picture. Therefore we must take care to give as nearly as possible the correct exposure, and then to develop fully, so as to secure sufficient contrast and avoid the flatness to which the superficial nature of the original would naturally tend.

The choice of a plate for copying is an important question. Some operators assert that they can make as good copies on their regular portrait plates as upon any other. This may be so with certain subjects, but with badly faded originals a variety of speed and quality is essential. Although it may seem paradoxical, the best results from very flat and faded originals can often be obtained upon "process" plates in spite of the yellowness of the ground, and such plates should always be used for line subjects, letters, and the like. Ortho plates with a yellow filter are absolutely necessary for most colored subjects. A plate which does not give density readily is not usually much good for this class of work, therefore "ordinary" plates are always to be preferred to more rapid grades. There is no disadvantage in using an orthochromatic plate for any class of work, even without a screen. There will be practically no difference in the color rendering unless a screen be used, so that there is no necessity to stock ordinary and "ortho" plates of the same speed.

A last note of advice we would give the beginner in copying is not to try experiments on a rush job, but to work at leisure when a failure can be investigated, and a second trial made without delaying the execution of the order.—British

Journal of Photography.

The Choice of a Surface and Grade of Bromide Paper

BROMIDE paper is made in a very large variety of surfaces and grades, and many photographers do not fully realize that this is not done simply for the purpose of pleasing the ultra-fastidious worker, but because each surface and each grade has a definite use in the production of prints of many different subjects for many different purposes, and also to suit various types of negative. When choosing a grade of bromide paper for a certain negative the worker will do well to base his choice upon certain conditions, and of these primarily there are the requirements, as manifested by the subject and the character of the resulting print, and, further, type of negative from which the print or enlargement is to be made, and the size and position that the finished print is to occupy with regard to the surface of the paper. We should find that if we made one print or enlargement of first-class quality from a technically good and sharp negative upon glossy bromide, and another upon the grade known as extra rough, we should have prints widely differing in character. The first would be full of detail, even when examined closely, while the second would have little or none of the more minute detail of the negative; and if we took a print on the velvet grade or semi-matte, we should find that as regards this it would come between the two preceding examples. From this it will be readily seen that if, say, a print is wanted for a special purpose, say reproduction in half-tone, in which much of the finer detail is

necessarily lost, then we must make our print upon glossy paper, in order to unduly obviate this. For general pictorial work, exhibition-wall decoration, etc., where the print is not viewed from a near distance, the question of detail is not of such importance, but this, again, will be found to depend very largely upon the subject. If a broad pictorial effect is required, the roughsurfaced paper is an undoubted help in breaking up what would otherwise often be uninteresting masses; while if the subject is one of a decorative nature, such as a flower or study of still-life, detail will be required, and the enlargement should be made upon a smooth or "platino-matte" grade of paper. Bromide paper may also be obtained in two speeds, rapid and slow. This will be found to give the worker a certain amount of control over the contrast of his print, though in a less degree than would be given by the use of "vigorous" and "soft" gaslight paper. When bromide paper, either when making contact prints or enlargements, the same rule applies; the slower the emulsion the more contrasty the print, and this is even more the case when the developer is also diluted or restrained by the addition of bromide. With regard to bromide paper coated on tinted bases, we can only add that unless the print is to be sepia toned, white is by far the preferable, while if toning is intended a cream base will add to the effect very considerably.—Amateur Photographer.

How to Measure Your Stops

It is important that young assistants should be taught to understand thoroughly the exposurevalues of their lens stops. Guess work or miscalculations lead to the undertiming or overtiming of exposures, and the resulting spoiled negatives mean a serious loss to the employer.

Even a modern lens, with its focal length given and its stops plainly marked in "f" numbers, is puzzling to the beginner; but a lens of an old type or a foreign make, with an unknown focal length and its stops marked in figures he doesn't

understand, is a riddle.

The majority of professionals will remember being taught in their apprenticeship days that the "f" value of any stop could be ascertained simply by dividing the focal length of the lens by the diameter of the stop used. They have found out since, no doubt, that absolute accuracy cannot be attained by this simple method. Strictly speaking, it is accurate only for a single lens, and then only when the stop is in front of the lens. It is quite near enough for measuring the stops of ordinary rapid-rectilinears; but a more precise method must be employed for portrait lenses or modern anastigmats with large apertures.

When a photographer attempts to check the "f" numbers on a high-class anastigmat lens by this rough and ready method, he finds that his results do not agree with the markings which have been adopted by the maker. At first he may suspect the maker of exaggrating the speed of his lens—but this is a trick to which no reputable maker would stoop. The discrepancy between the maker's figures and his is due, in all probability, to his neglect of one important factor.

This factor, so often overlooked by the practical worker, is the difference between the effective aperture and the actual diameter of the stop used. When a stop is used between the combinations of a lens, the effective aperture is considerably larger than the stop opening, owing to the condensing power of that part of the lens which lies in front of the stop. The difference may be safely disregarded in a cheap lens working with a small stop; but it becomes a serious matter in an anastigmat lens working with a large stop, because the error is proportional to the size of the apperture.

A simple method of finding the effective aperture was suggested a number of years ago. It recommended that the camera should be set at infinity or the lens focussed on a distant object. A thin piece of opaque card should then be placed over the ground glass, and a small hole the size of a pin-head, should be made in the card exactly opposite the axis of the lens. The camera should then be taken into the dark room and a lighted candle held near the hole in the cardboard. The effective aperture is the diameter of the beam of light which will emerge from the front surface of the lens. The easiest way to measure this beam is to fit a piece of bromide paper into the lens hood with its sensitive surface close to the lens, put on the cap and expose for about half a minute with the lighted candle. The black circle, which will be found on the bromide paper after development, will indicate the effective aperture of the stop used; and, if the diameter of this circle is divided into the focal length of the lens, the true "f" number can be ascertained.

If the focal length is not known, it can easily be calculated by focussing the lens successfully at two different distances upon some suitable object, such as a foot-rule hanging vertical on the wall, or a square box placed upon the table. In each instance, the extension of the camera should be marked on the bed and the height of the sharply focussed image marked upon the ground glass. Then if the height of the object in inches is multiplied by the distance between the two extensive points on the bed, and the product divided by the difference between the height of the two images on the ground glass, the result will give the focal length of the lens.—*Photo Digest*.

The Restoration of Faded Prints

TURNING over the leaves of a photographic album, one cannot but be struck by the number of old photographs which have faded in the course of time. Such examples are mostly silver prints either on albumenized or on gelatino-chloride paper; bromide prints appear to be much more lasting, while platinotypes do not fade, although the paper may discolor. One of the jobs which the photographer is sometimes asked to undertake is to restore some such faded print.

It is evident from the fact that it has to be restored that the picture is a valued and irreplaceable one, since if the negative is in existence it is far better to apply to whoever owns it and get a fresh print made. This would not only be

superior to anything we could hope to make of the old faded one, but it might also be made by a permanent process. The assumption, then, being that the picture cannot be replaced, it is most important not to submit it to any operation likely to endanger it, without first photographing it, so that at the worst we should have a copy of it.

copy of it.

If this photography is done on an ordinary, not on an orthochromatic, plate, it will often happen that the result will show so much improvement over the original that it is not worth attempting to restore the latter. The fading takes the form of a change of the darker tones of the picture from deep purple to yellow or yellow-brown, and although the yellow looks much lighter to the eye it is very little lighter to the non-orthochromatic plate. Along with the fading, one sometimes notes the formation of a number of white spots on the print; and as, whatever restoration may accomplish, it will not get rid of these, the new negative, if otherwise satisfactory, should have the spots carefully filled in, and then a print can be made from it, to take the place of the old one. Three times out of four this will be all that need be done; but in the fourth case restoration must be put in hand.

The first stage is, in the case of a mounted print, to take it off its card. It should be soaked in cold water for a couple of hours before doine anything else to it. This usually splits up the card, which may be pulled off in layers, and, after a little coaxing, can be removed completely. The operation should take the form of removing the card from the picture, not of peeling the picture from the card, as this is likely to result in a tear.

When the mount has been got rid of, the print should be placed in a 5 per cent. solution of alum for half an hour. This should be done, whether it was mounted or not. It may then be given a thorough washing by hand, say a dozen changes of water spread over half an hour, and will be ready for the restoration process, with a minimum of risk of damage.

The solution employed for this purpose is a slightly acidified one of mercuric chloride. Ten grains of mercuric chloride may be dissolved in a mixture of 10 drops of hydrochloric acid and 4 ounces of water. The exact strength is not very important, but the solution should be fairly weak.

Immersed in this, the picture will generally go a good deal lighter, but it does not usually disappear entirely, and the extent to which it alters varies very much with different prints. The action need not be hurried, and a quarter of an hour in the mercury is none too long. After the lapse of that time the print may be once more well washed; the success of the operation depends very much upon the way in which the washing is carried out.

After washing, the print is placed in a developer of the following type, in which, if all has gone well, the image will soon appear to be much stronger than before:

There is nothing very special about this formula; it is only given as typical of the developer which may be used. It will be noted that it is weak, and contains no bromide. Ten minutes in such a solution will be ample, and it only remains to wash the print thoroughly once more,

and then to dry it.

This method of restoration will be found in most cases to be effective, but it does not follow that it will always answer. The causes of fading are not always the same; the chemical changes in one case may be quite different from those in another, and the exact nature of such changes in any particular case cannot be certainly known.

—Pholography.

Dry Mounting without Press or Tissue

No doubt in many respects dry mounting by means of hot press and tissue is ideal, but it has the disadvantage of being rather expensive: and that to a great number of photographers is an insurmountable one. Not only is the initial outlay somewhat heavy, but there is a constant expense for heating and tissue. The method of mounting which it is proposed to describe is cheap, convenient, requires no more expensive apparatus than an ordinary domestic flat-iron, and there is no bending or cockling of the mount, which last statement can be made of very few mountants in which water, in even small quan-

tities, forms an ingredient.

The principle of the process is this: that when shellac is heated to about the temperature of boiling water it melts, and becomes very "tacky" at the same time. If, then, we give the back of the print a coating of shellac, and when in contact with a mount heat it to a temperature of 100° C., the print and the mount adhere, and a mounted photograph is the result. Moreover, since there is no evaporation of water there is no contraction; consequently no cockling, and the print and mount lie perfectly flat. This sounds, and indeed is, very simple, but, like most simple things, there is a right and a wrong way to do it; and the writer wishes in this article to help fellow photographers avoid some few pitfalls out of which he has climbed during his

working of the process.

The first thing is the making of the solution of shellac. Obtain ½ lb. of common brown shellac from the drysalter, place in a bottle, and pour in methylated spirit until the shellac is about half to two-thirds covered that is, there should be 8 oz. or 9 oz. by volume of solution when the shellac is completely dissolved and thoroughly incorporated with the spirit, and the solution should run easily, but should be much more viscous than water. The shellac takes some twenty-four hours to dissolve, and the best way to hasten the process is to place the bottle in some warm position, such as the kitchen mantelshelf, giving it a thorough shaking from time to time. For several reasons, a wide-mouthed bottle is most convenient in use.

The next step is the application of the shellac solution. This should be done before the print is trimmed to the required size. It does not then matter if a little of the shellac creeps over the edge of the print on to the image side. The

solution is applied with a soft hair brush about ‡ in. wide, and a fairly thin, even coat is given to the back of the print. It is well not to err on the "over" side, otherwise when the heat is applied to the print the shellac will begin to ooze round the edge, and in the case of self-toning papers if there be too much methylated spirit present it will begin to dissolve the film itself. This, by the way, is one reason why the shellac solution should not be too dilute; another is that with insufficient shellac present proper and permanent adhesion between print and support does not take place. If by some inadvertence a little of the shellac has found its way on to the surface of the print, it can easily be removed in the case of bromide and gaslight papers or P.O. P. by rubbing gently with a tuft of cotton-wool moistened with methylated spirit, but this is mpossible with most self-toning papers, as already shown, and it should be attempted very carefully with carbon and platinum papers.

Having applied the shellac, the print should be left to dry for half an hour, and it may then be trimmed and mounted at once, or left for a few days or even several weeks, for the mounting. In this respect the process is very convenient, for a number of prints can be coated with shellac in a few odd minutes, and then left for an opportunity of greater leisure for the final operations. It should be noted, however, that the prints appear to adhere to the mount with the maximum of ease when the coating and mounting are done

on the same day.

Now to the actual mounting, and in this part of the process there are more precautions to be taken than in any other, but after the first attempt or two they become a matter of routine. 'press," as has been already intimated, consists of an ordinary flat-iron, but if it be equipped with one of those nickel-plated shields, now sold by ironmongers at about 9½ d., it will be found much cleaner and more convenient to use. The iron is heated in the usual housewife's way, on the gas-ring or at the fire, but not to so great a temperature as is necessary for domestic use. If too hot, there is a tendency to burn the shellac instead of merely melting it, and the print curls so violently that it is difficult to make it lie flat on the mount. If the iron be too cold, then the shellac does not melt properly: it is difficult to get the print and mount to adhere at all, and often enough, when cold, the print breaks away from the support, either in patches or altogether. The right temperature is reached when, if the iron (without shield) be placed 10 in. to a foot from the cheek, the heat radiating from it is just perceptible to the face. About twelve prints (quarter-plate) can then be mounted before the iron becomes too cool. For a large number of prints, two irons worked in relays are a conveni-

For ironing down the prints, a firm flat support, such as a deal kitchen table, is necessary, and it is well to place on the top three or four thicknesses of paper which have been thoroughly warmed before the fire to drive out absorbed moisture Between the print and the iron there should be a sheet of plain, thin paper, otherwise the iron will leave shiny marks on the print. This sheet of paper must also be thoroughly dried previously

by running the iron several times over it, to obviate any danger of its sticking to the print. Now, having made all preparations (which, although apparently numerous, in reality take but a few moments), the mount is put on the table, the print placed in position and held there while the sheet of thin paper is put on, and the hot iron passed steadily all over it, in a large print starting from the center and working to the edges. After the iron has covered the whole surface, raise the paper to see whether the print has everywhere adhered to its support, and if some corner or edge is still unattached, apply the iron with a moderate pressure for a few seconds particularly to that place. Sometimes if the iron is a little too hot it will cause the print to curl up. A gentle pressure of the fingers at the point will make it stick down properly as the shellac becomes cooler and more "tacky."

In using this method for passe-partout work (and for this it is particularly suitable), it is best to attach only the top edge of the "auxiliary" mounts and print, since the pressure of the glass ensures them lying flat when bound up; but care should be taken to dry the mounts well before ironing down, otherwise a little buckling will take place owing to the rapid evaporation of absorbed moisture contained in the paper.

Perhaps it is hardly necessary to add that the print may be removed from its mount at any time should this be required, by passing a hot iron over the face of the print and then gently pulling it away from the mount as the warmth makes the shellac melt.—Photography.

Rational Development

THERE are many ideas as to what is the correct way of developing a negative, and the exponents of each claim that theirs is the true and only way. There is no accepted standard for goodness in a negative, which is perhaps a good thing, for its absence allows of individuality in the finished result, although this must not be confused with "fluking," which is what happens when an operator aims at one effect and obtains quite another, which he is astute enough to put forward as a premeditated piece of work. clever photographer is the man who starts with a definite idea for a picture, and by skilled technic realizes it in a print. To do this one must have perfect control of exposure and develop-The best lighted figure may be made either hard or flat by incorrect exposure, while a correctly exposed plate may be made to yield a thin soft image or a dense harsh one by injudicious development.

To ensure even quality it is very necessary to keep to one brand, and preferably one grade of plate. The best technician in the world could not produce a dozen negatives of even quality from twelve plates of different makes and rapidities even if all had received an equivalent exposure. Plates vary greatly in the time taken for development and in the appearance of the image before fixing. A common way of judging the progress of development is to look for a trace of the image on the back of the plate. This can only be done if one brand of plate is in use, and then only to a limited extent, as this method is

quite upset by variations in the thickness of the emulsion coating. While upon this subject it may be useful to correct an error sometimes made, which is, that when the image is clearly visible on the back of the film, the utmost density which the plate will give has been obtained. We had a case under our notice some few months ago where the operator proposed to change his plates, because, although he developed them right through to the back, the images were always thin. On our suggestion he allowed some plates to remain in the developer for three minutes longer than others, which he fixed at his usual time, and was convinced by the difference in density that his development had always been carried on for too short a time.

One of the old errors was that the best results could only be obtained by what was known as "tentative development." This meant starting the development with a minimum of alkali, which was gradually added as needed. There was some reason for this when ammonia was used as the alkali, as volatilization rapidly reduced activity of the solution, and fresh ammonia was needed to complete development. When the fixed alkalies in the form of the carbonate of soda and potash came into general use the "working up" by adding small quantities of alkali to the developer fell into disuse, although a few old-fashioned workers still practise it.

It is not our purpose to recommend any particular developing agent as superior to the others. Some developers have the reputation of giving thin images and others plucky ones, but this is largely a question of dilution and temperature. Next to exposure, which decides the possibilities of the negative, comes length of development with any given solution. With normal exposures short development gives a thin flat negative and long development gives the maximum of density and contrast. Between these extremes the operator must choose for himself. All non-staining developers, such as amidol, hydroquinone, and many others yield a negative of which the printing quality is due to reduced silver only, but pyro behaves differently, the silver image being reinforced by the "pyro stain." It is generally acknowledged that a stain." It is generally acknowledged that a pyro-developed negative will usually give a more brilliant print than one of apparently similar density, but free from stain. This is due to the fact that the stain is deposited in proportion to the density of the image, and is not uniform all over the plate. If such a negative be dissolved away, by using Farmer's reducer, it will be found that a thin brownish-yellow image remains.

One of the commonest errors in development is to overdevelop underexposed plates, and to underdevelop overexposed ones. This is caused in the first place by the desire to force out all possible detail in the shadows, the result being that the high-lights are made so dense that any shadow detail is lost in the necessary depth of printing. In the second case the overexposed plate is underdeveloped because the whole surface of the film quickly blackens, and the operator fears that the detail will become buried. This is quite wrong; the proper course is to develop for the full normal time, and to dissolve

away the fog with the ferricyanide reducer. It may be noted here that it is of little or no avail to add bromide to the developer after the image is well out; to be effective, bromide should be added to the developer before pouring on the plate.

The degree of dilution of the developer has an important effect upon the negative. A weak solution can be used until all the details of an underexposed plate are brought out, without obtaining too much intensity in the high-lights. Concentrated solutions give the maximum of contrast, especially when a little bromide is used in addition.

Too prolonged development will give a general chemical fog, and an excess of alkali often added in cases of underexposure has the same effect. A disagreeable color, not quite a fog, is caused by putting plates developed with amidol or metol direct into the fixing bath without rinsing. With pyro the fixing bath rapidly becomes discolored, but with the non-stain developers a large quantity of solution can be carried over into the fixing bath without altering the color very much.—B. J.

An Easy Method of Silvering Mirrors

MIRROR silvering is an operation which is avoided by most photographers as a process in which the successes are few and for the favored. After several failures with the tartaric acid-sugar reducing agent for silvering glass, the present writer cast about him for some simpler and more rough and ready method of preparing a reflector for his camera. It has long been known that it is possible to produce silver mirrors by the use of formalin as a reducer. The method, however, has not come into practical use because the deposit of silver is usually so granular that it will rub off the glass upon the least touch. The following formulæ provide a means of silvering glass and other substances with ease and rapidity, and the process is a fascinating one to watch.

STOCK SOLUTIONS

Sto	cb	Silver

Silver nitrate .		• 1	45 gr.	3 gm.
Distilled water	•	•	10 oz.	300 c.c.

Stock Formalin

Formalin (40 per cent. formaldehyde) . 45 gm. 1 oz. Distilled water 10 oz. 450 c.c. Methyl violet dye 10 gr. 1 gm.

These solutions improve on keeping.

The following quantities are sufficient for 20 square inches of glass, allowing for waste silver being deposited on the disk and elsewhere.

Take 3 oz. (90 c.c.) of the stock silver solution and add 10 per cent. ammonia solution drop by drop (a fountain pen filler is handy for this), shaking the mixture after each addition. mixture first becomes turbid, and then gradually clears. When clear, stop adding ammonia, slight excess of ammonia is not detrimental. In another receptacle pour out 3 drams (11 c.c.) of the stock formalin solution.

The Silvering Process

Take the piece of glass it is intended to silver, and clean it well with whiting and water, or by any other method that may be favored, and rinse it under the tap, swabbing the surfaces with cotton-wool. Now rub the wet face of the glass with another piece of cotton-wool which has been soaked in the following priming solution:

Tin protochloride (stannous chloride) 25 gr. 1 gm. Water . 10 oz. 200 c.c.

Ordinary tap water will do. This so should be thrown away when done with. This solution

Rinse the glass under the tap and wipe it with a piece of cotton wool which has been dipped in distilled water.

Place the glass face up in a developing dish which has previously been cleaned with nitric acid and rinsed with distilled water.

The next operation is to add the formalin to the ammonio-silver mixture, and immediately pour into the dish, and to rock the dish well.

The silver begins to deposit at once on the primed surface, the solution becoming darker after a short time, and then slowly clearing. After from one to two minutes the solution reaches its maximum clearness, the by-products of the reaction forming into little granules. At this point run tap water into the dish and lift the mirror out and rinse it, finally swabbing with a soft piece of wet cotton-wool.

Allow the mirror to drain for a minute or two, and remove any drops of water from the surface by lightly touching them with a piece of blotting paper. After half an hour or so the mirror should be quite dry and ready for burnishing.

Finishing the Mirror

When dry, the mirror should have a brilliant surface, with a slight yellowish tarnish, which must be removed by polishing if the front of the mirror is to be used as a reflector.

For polishing and burnishing the surface, take a piece of wash-leather a couple of inches square, or, failing this, a piece of really soft cotton rag, and tie it round a plug of cotton-wool, so as to form a medium soft pad. Keep this in an old plate-box with some rouge. The rouge may be bought at a chemist's, or in some households purloined from the feminine dressing-table. Jewellers' rouge is sometimes too coarse. The wash-leather pad should be lightly charged with the rouge

Warm the mirror and the pad slightly so as to be sure that no moisture is present, and then lightly rub the surface with a rapid small circular motion. The mirror will take a brilliant polish

and is then ready for use.

General Consideration

Practically speaking, the hotter the glass before applying the silvering solution, the whiter and more granular the resulting mirror will be. Cold solutions produce quite a good deposit, which is dark in color on the surface, but which takes a brilliant white polish. The best tempera-

ture is about 70° to 80° F. It is a good plan to have the glass a few degrees warmer than the solutions. This can be accomplished by immersing the glass in tepid distilled water for a few moments before silvering.

Celluloid may be easily silvered by exactly

following the procedure as for glass.

Mirrors may be silvered face down if desired. It is a question more of convenience than actual merit.

Silver may be prevented from depositing on unwanted parts by painting those portions with vaseline or celluloid varnish previous to priming with the tin solution.

Spent solutions are hardly worth saving, even when there is a quantity. Most of the silver in the solution comes down as actual mirror surface.

Methyl violet dye has the property of keeping the surface of the mirror brilliant and unclouded. Its action is analogous to that of bromide in a developer. It may be omitted if not available.

The priming bath gives a much more adherent It also has the property of attracting most of the silver to the working surface, instead of too generously distributing it on the sides and bottom of the dish. It is supposed that a silicate of tin is formed on the surface of the glass (F. Fafet, Jour. Soc. Chem. Ind., 1893, 151.) This, however, cannot be the case with celluloid or other non-glass surfaces.

The cost of silvering 20 square inches of glass, reckoning silver nitrate at \$1 per ounce, is about 5 cents. As failures cost as much as successes, it is a good plan to practise on small pieces of glass before attempting a larger surface. One has, for example, to learn how to clean glass properly.

Well boiled water can in most districts be used

instead of distilled water.

As a protection against oxidation, the mirror may be varnished with celluloid varnish. The coating of varnish should not be too thin or it will dry with a smoky surface. No other varnish is suitable for the purpose, because silver reacts with most gums, etc. It is, however, easy to resilver a mirror when the surface is worn away by repeated repolishing that in most cases it is hardly worth while to decrease the efficiency of the reflecting surface by varnishing it.
Measures, beakers, and dishes should be

cleaned after use with strong nitric acid, or the remnants of silver will give trouble when the vessels are used for other purposes.—B. J.

Professional Photographic Methods

VERY much may be done to enhance the effect of the finished picture by a little judicious manipulation after the print has been made. The methods we shall outline are applicable to bromide prints primarly, though some of them may be satisfactorily employed with gaslight papers. Carbon and platinum give less scope for after-treatment, and are best left unmodified by any intensification or reduction methods. For that matter bromide and gaslight prints must be so manipulated with considerable caution, or the effects will be irregular and unsatisfactory in color.

Vignetted prints, or those with masked margins will sometimes show stress markings and dirty edges, and must be cleaned up. Perhaps the most convenient way of doing this is by means of Farmer's reducer, used in very dilute form. A few drops of the ferricyanide of potassium solution added to a couple of ounces of 5 per cent. hypo is sufficiently strong. The prints should be thoroughly washed before commencing this cleaning work, especially if they have been fixed in an acid fixing bath. In any case stains are less probable if the soluble salts produced in fixation are removed by careful washing. The prints may be taken, one at a time, from the washing water, and laid face upward on a sheet of clean glass for manipulation. A tuft of wetted cottonwool, the medicated wool being preferable on account of its freedom from hard particles, is dipped in the weak reducer and mopped over the margins of the print, taking care to tilt the glass slightly so that the reducer runs off, and not on to, the print.

The shape of vignettes may sometimes be improved by careful work with reducer so applied but it needs some experience to soften a hard

edged vignette.

If a print is slightly dark it may be saved by carrying the reducer over the entire surface. especially if the negative is a soft one. If the print is at all hard, however, reduction is apt to make it harsher by eating away the more delicate

tones in the lights.

An alternative formula for this work is the well-known iodine and cyanide. It is a deadly poison, and for that reason should not be used if good results can be obtained in the way just indicated. The use of cyanide is further attended with certain difficulties in that it attacks the silver image very energetically, and also has a softening effect on the gelatin. On the other hand, it needs much less washing out than does the reducer containing hypo. The formula is as follows:

			Α		
Potassium	iodic	le			2⅓ oz.
Iodine .					Ī oz.
Water					10 oz

The potassium iodide must be dissolved first in just enough water to cover it, the iodine then added (it dissolves quickly), and the solution made up to 10 ounces.

Potassium cyanide 1 oz.

For use take 30 minims of A, 10 minims of B, and 2 ounces of water.

This solution may also be used for brightening up a print, but to prevent too rapid action it may be diluted to half-strength for this purpose.

Whichever method is employed, a supply of running water is an advantage, for the action of the reducer may be stopped at once when the

required result is obtained.

The toning of prints does not come within the scope of this article, but it may be well to mention that if prints are to be bleached and sepia-toned in the usual way, any cleaning up they may require must be done before the toning process. Once the image is changed into sulphide of silver it is no longer amenable to these reduction methods.



Where, for any reason, the color of a black print is not quite satisfactory, it may be improved by bleaching in the usual ferricyanide and bromide solution, and, after washing out the yellow stain, re-developing with a normal amidol developer. No fixing is required if the development is fully carried out, and a few minutes' careful washing will get rid of the amidol solution.

A good many prints used for commercial purposes are required unmounted, but on heavy-weight paper. In order to obtain a good appearance it is necessary that such should be enamelled. Not only is the detail more clearly seen, but the superior flatness of the print enhances its appearance. Naturally such prints will be made on a glossy paper. By far the quickest and most convenient method of glazing is by the use of ferrotype plates or pulp slabs. The plates should be carefully wiped with a soft cloth to clean them and then wiped gently over with a tuft of cotton-wool and a touch of olive oil. With another clean cloth this may be almost polished off and the thoroughly soaked prints laid down on the plates. Then, laying a sheet of waterproof cloth over all, the squeegee may be vigorously applied. When thoroughly dry the prints will usually fall off

the plates of themselves.

The trimming of prints is a matter requiring care and a true eye. If adhesive-tissue for dry mounting is to be attached, it will be done before trimming, and care needs to be taken to hold the trimming knife quite vertical, so that no tissue projects beyond the edge of the print. With gelatin-surface prints, which are liable to stick to the zinc plate in the hot press if at all damp, it is necessary to take precautions to ensure complete dryness, and this should be done before We have seen attaching the adhesive tissue. workers attach the tissue, trim the print and fix it in position on the mount, and then dry the print by holding mount and print over a gas ring or in front of the fire. This simply causes the print to contract slightly as it dries, and as the tissue does not contract at all there is an edging of tissue visible all round the print after the whole thing has been fixed down in the press. Platinum prints are not likely to stick to the zinc plate, but all prints should be as dry as possible, or the contraction under the heat of the machine will produce the effect referred to in some slight

Trouble sometimes arises when dry-mounting very thick papers. We have found it occur with single transfer prints on thick Whatman paper, and with some of the thicker brands of rough bromide paper. The heat of the press causes the print to curl, and so powerful is the curl that it pulls the edges away from the mount as soon as the pressure is removed. The heated shellac is, of course, quite plastic for a moment or two after the print has been taken from the press. A simple way of getting over this difficulty is to draw out the print and zinc and at once to press the zinc firmly down on to the print by means of a duster, the plate being too hot to touch with the bare hand. If the zinc plate is thus held firmly down until it has cooled slightly, time is given for the adhesive shellac tissue to set, and it is then powerful enough to resist the curl of the

thick paper print.

The scheme of mounting may be much more readily varied nowadays than when the print was simply pasted down on to a stock mount. There are, of course, many such mounts of excellent design and pleasing colors which may be regarded as standard for certain classes of print. But the worker who makes up his own mounts has certain advantages. He may, for example, trim his print to its own size, instead of having to trim it to fit the mount he has in stock. This gives individuality to his productions and enables him to make a point of the fact that each client's pictures receive his personal attention and are dealt with on their own merits. The picture space may be much better filled, though that is perhaps putting the cart before the horse, and we ought to say the size of the picture space is determined by the filling.

Further than this, yet equally important, is the harmony of print and mount as to tone and color. Certain modern mounting papers appear to suit almost any print, but if there is at hand a good selection of tints, prints which are not quite perfect may be so mounted that their slight imperfection is quite concealed. A few examples may be given—first, of tone-contrast, and, second of color. A print slightly too light will be materially helped by the juxtaposition of a white margin, while the converse is equally true. A trace of green in a print may be killed or accentuated as desired by mounting the print on a greenish mount or on one which has just a tinge of red in it, red being the complementary or

contrasting color to green.

We do not suggest the use of elaborate multiple mounting for professional work, because we think the cases where it is fully appreciated, even if very perfectly done, are so few that the expenditure of time is not justified. But occasionally the employment of an extra tint or line round the print will help the effect and may make all the difference.

When using the modern mounting papers, particularly the brown shades, special care should be taken to avoid any finger marking. Warm, moist fingers will play havoc with these papers, many of which we find very sensitive. A good plan is to work in a pair of thick cotton gloves, and, if necessary, to have another pair to change into. The hands may occasionally be dipped into cold water and well dried, such a time being chosen for a change to the other pair of gloves.

After the prints have been mounted it will sometimes be found that there are slightly shining patches on them, due to unequal pressure from the mounting zinc, or possibly due to the sandblast matting of the zinc having been damaged. Such marks may usually be removed and the print rendered uniformly matt by rubbing with a little finest pumice powder. Either the finger tip or a bit of cotton-wool may be used, but rubbing must be very light, or a patchy mark of increased mattness will be produced. We have seen P. O. P. prints matted all over in this way, and a beautifully even surface produced.

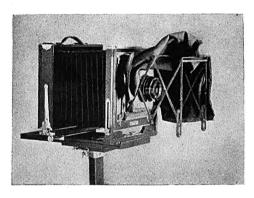
It may be well to mention a method of removing stress or friction markings from the print after mounting, for it sometimes happens that such marks have been so slight as to escape

notice at an earlier stage. A little tuft of cottonwool may be moistened in alcohol and rubbed very gently on the print. The marks will be removed by a kind of frictional reduction, for obviously they exist merely on the surface of the film. This rubbing sometimes leaves a mark, but the pumice powder may again be utilized to even up the surface. It is more difficult to treat glossy prints in this way, for the surface is more likely to become matted by the friction of the cotton-wool.

Spotting and the various methods of manipulating vignettes by hand-finishing scarcely come under the scope of this article, but we may say in conclusion that whatever is done, whether in mounting or in artistic finishing, must be done with precision. Nothing looks more amateurish than inaccuracy in trimming or sloppiness in spotting and touching up. These last touches to the work are often those which most impress the client, because in many cases they are matters which he understands at a glance.—British Journal of Photography.

An Ideal Lens Shade

The lens shade described in Mr. Charles H. Davis's article last month is shown in the accompanying cut. The construction is quite obvious. The cover cloth, which should be of black felt or velvet, is shown raised to enable the frame work to be fully seen. The rivets at the joints of the frame are fastened loosely enough to permit free extension or closing. At



the bottom of the front section is a slot on each leg along which the set-screws, provided with thumb-nuts, moove freely, and by which the whole frame may be rigidly clamped. The hood is hooked to the camera front at the top, and the lower legs are felted (to avoid scratching the camera front) and left free to move when the length of the hood is adjusted. For carrying, the whole affair collapses to a thickness of only two inches. It is made of thin brass strips, about $\frac{1}{16} \times \frac{1}{4}$ inch. This hood is not on the market. Mr. Davis constructed it in his own laboratory, which is equipped with tools and machinery for all sorts of work necessary in an experimental and photographic workshop.

The cut also shows the Home Portrait camera and tripod used by Mr. Davis in his work, which are referred to in his article in our June issue.

Quinine Backing for Plates

A NOTE in the *Pharmaceutical Journal*, by Mr. F. J. Yeatman, is as follows: In photographing a church interior, requiring a long exposure, the author was confronted with the usual difficulty of halation, and in the absence of backed plates or the ordinary backing solutions, sought a means of overcoming it. Surmising that a minutely crystalline deposit, brought into optical contact with the glass of the plate (by application in the form of a solution in a volatile menstruum), would prevent the reflection of light from the inner surface contiguous to it, the following solution was prepared:

Quinine hydrochloride . . . 60 gr. Absolute alcohol . . . 1 fl. oz. Dilute sulphuric acid . . 3 drops

A plain glass was taken, and half its surface on one side was covered with the solution by means of a tuft of cotton-wool. When dry (a matter of a few seconds) it was dabbed over lightly with the solution, and again allowed to dry. Holding this horizontally (deposit downward) near a window, the window frames could be seen, reflected, accompanied by a dim fringe, presumed to be a secondary reflection from the lower inner surface of the plate. This fringe ceased on the part of the plate covered by the solution. Photographic plates were then backed in this manner, and yielded successful halation-free photographs, though taken under severe test conditions. The church interior above alluded to was given half an hour's exposure, and no halation ensued. The back of the plate is, of course, easily cleaned after development or fixing by means of weak acid.

Photography in the Tropics

The great source of difficulty in the tropics is not the heat but the damp. Heat alone is easily dealt with, but the combination of heat and damp makes the lot of the photographer by no means an enviable one. Damp is the great enemy, but insects and germ growths, which thrive on gelatin, have to be reckoned with. Nevertheless, with forethought and reasonable care, one's hobby can be carried on with success, even in the worst climates.

The first consideration is choice of apparatus. One reads much about special tropical models, but it is surprising how few one sees in actual practice. Out of every hundred cameras one comes across in the tropics, ninety-nine are just the ordinary varieties; and for those who are only birds of passage, or who indulge in photography only in the dry season, these are quite good enough if not exposed too long to the rays of the sun. In the damp weather, however, if the camera is not very carefully kept in a drying room or in an air-tight case, mildew soon covers all the leather, the leather itself begins to peel off, and glued parts too fall to pieces,

so that the camera quickly becomes useless. Therefore, if one intends to do photography at all times of the year, and wishes the camera to be as handy as possible, some special model is necessary; but in the vast majority of cases a brass-bound camera of mahogany would be just as satisfactory as one of teak, and would be much lighter. Of course, in cases where the very worst conditions have to be met, and there must be no doubt whatever about the capacity of the material to stand them, teak is the wood; but such cases are very rare. In such a model the bellows must be of Russia leather, which is not so loved of insects as the usual kind; and steel should be avoided altogether. In fact, steel should not enter into the composition of any apparatus to be used in the tropics.

If a focal-plane shutter is used, it must be borne in mind that rubber quickly perishes in a hot damp climate, so that the fabric should concontain none of that material. In choosing a lens, it should be seen that all the components can readily be got at for cleaning, and for the very worst conditions a brass mount is better than aluminum, which will not resist the climatic conditions as well as brass. The ordinary lens cap is very susceptible to damp, and for that reason is generally a source of evil rather than good. It is better to have the lens unprotected than covered with a damp lens cap. A brass or metal cap, however, is quite safe.

The glare of the sun is so great in the tropics, especially where roads and buildings are white, that a lens hood is more desirable. If a focussing cloth is used, it should be white on the outside. It is astonishing how hot one becomes under the usual black cloth. If an antinous release is used, its core should be of brass or copper, not steel.

As regards materials, it is preferable, if much work is done, to get them direct from England. Plates stand damp better than films; in fact, I have known a spool of films become a solid mass. Plates are best sent out in soldered tin boxes, two dozen in a box. If only opened as required, good plates stored in this way will last for years. In that case it is advisable to store them as dry as possible, in an air-tight case for example, as otherwise rust may in time eat through the boxes. Paper should be kept in the same way, or in metal boxes sealed with rubber tape, or cylinders similar to those supplied for platinum paper. If rubber tape is used it should be renewed frequently.

Rubber bulbs and tubing should be stored in the dark, kept as cool as possible, and be rubbed over liberally with French chalk, which prevents oxidization. Care should be taken that there is no kink in the tubing, and that no chalk is allowed to get into the camera or any valves.

Filters and safe-lights are very susceptible to attack by damp and germ growths, as they consist of a layer of gelatin between two sheets of glass. They should, therefore, always be kept in one of the cases and be frequently examined. It is a pity that the binding of filters and safe-lights for use in the tropics is not cemented with some waterproof solution or cement.

Bottles containing chemicals should be kept hermetically sealed with paraffin wax. This should be done whenever a bottle is opened. Liquid developers such as Azol keep well; and tabloid chemicals, being compressed, are not so affected by damp as loose chemicals.

There is always a tendency in very hot weather to make a coolie carry the camera if it is a large one. But this is a course to be deprecated, as he may drop it or have some other mishap, in which case you may rest assured that he will be very careful not to mention the fact, and you may go on spoiling plate after plate in blissful ignorance. It is also by no means an easy matter to get apparatus repaired.

Most people imagine that in the tropics exposures are short. This is the case in bright sunshine with very little shadow; but when there are heavy shadows in the foreground it is of no use to trust to one's preconceived ideas. The only thing to do is invariably to use a reliable exposure meter, testing the light in the shadows, and working to results.

One of the great rules of tropical photography is to expose as soon as possible after taking the plate out of its air-tight box, and to develop immediately after exposure.

It is important that plates shall be handled as little as possible, and with that end it is advisable to use a tank, so that the whole of the operations can be completed without touching the plates after once putting them in. It is also desirable that development shall not be too prolonged.

Many people use ice with the water, but I have always preferred to use the water at its normal temperature, as with ice it is difficult to maintain a constant condition. With the plate I generally use (the Wratten panchromatic) I have had no trouble with frilling, provided proper care has been taken. Azol and Rytol are the developers I have always used. The first is among those worked out on the special Watkins thermometer, which shows the time of development for all plates specified on the Watkins card at any given temperature.

Amidol, owing to the fact that it can be used without an alkali, is specially suitable for developing plates in high temperatures. Any of the standard formulæ may be used. Above 80° F. one may get a little fog, but the following developer can, it is said, be used up to 104° F. with good results, both as regards fog and prevention of the melting of the film:

Water	35	oz.
Amidol or diamidophenol .	75	gr.
Sodium sulphite (anhydrous)	7월	dr.
Ammonium sulphate crystals	8	oz.
Potassium bromide	45	gr.

The mixed developer will not keep for more than a few days. The ammonium sulphate can be replaced by 4½ ounces of anhydrous sodium sulphate. For tank use, it would be necessary to ascertain by actual experiment the times for development at different temperatures.

The plates should go direct from the developer into a hardening fixing bath. The following is a good one:

Potassiu	m	met	abi	sulp	hit	е	150 gr.
Hypo Water				•			4 oz.
	٠.						20 oz.
Chrome	al	um					150 gr.



Dissolve in the order in which they are named. When washing the plates, it should be remembered that the warmer the water the more soluble is the hypo, so that washing need not be so prolonged as in England. A simple test to see whether washing has been sufficient is to take some of the water in which the plates have been washed, and make it a pale pink with potassium permanganate. If it has retained its color at the end of half an hour, the washing can be regarded as satisfactory. Organic matter, as well as hypo, however, will turn the water brown, so some unused water should be tested at the same time.

With these precautions, frilling should be rare even if ice is not used, but should it occur the plate should be soaked in methylated spirit and

the film pressed down with the finger.

The adventures of the plate, however, are not ended yet. In damp tropical weather it is astonishing how long it takes to dry, and in the meantime the gelatin is liable to become pitted, or germs spoil it in patches, while cockroaches and other pests delight in making a meal from the most important spots. Hardening is some protection against these; but a further safeguard so far as insects are concerned, is to make a rectangular frame with a post at each corner, so that the whole can stand over the drying rack, and then to cover it with a miniature mosquito curtain. This is also a protection against dust.

curtain. This is also a protection against dust. As regards pitting and germ growths, besides the hardening the only thing to do is to dry the plates as fast as possible. A current of air from a fan should be directed on to them, or they should be placed in a drying room (not hot enough to melt the gelatin), or soaked in methylated spirit before drying. This commodity, however, is sometimes less readily obtainable than in England, and the more water it absorbs the less is its efficacy. It can be revived, however, by putting anhydrous sodium carbonate into it. This draws the water from the spirit, which, after a few hours, can be run off, and the sodium carbonate, after drying in a shovel over a fire, is ready for use again. The best course is to dry it immediately before use, as it absorbs moisture from the air.

After the negative has been dried, it should be varnished, especially if it is to be used much for printing-out purposes, as with a hot damp atmosphere the silver from the paper is bound to affect an unprotected negative. If the negatives are not varnished they should be kept face to face in metal boxes sealed with rubber tape. As mentioned previously, all rubber tape should be renewed from time to time, as it deteriorates.

For gaslight papers I have always used the same developers as for plates, while for bromide paper amidol cannot be beaten. If the prints are to be toned, it is essential that they be hardened, or blistering will certainly result. The following hardening fixer is a good one. It is clear and so allows the prints to be readily seen:

Sodium citrate . . . 1 part
Table salt 4 parts
Common alum . . . 4 parts
Potassium metabisulphite
Hypo 40 parts
Water 200 parts

If fogging should occur with amidol, metolhydroquinone may be used. The film side of no papers should be handled, and fixing and washing should be completed as rapidly as possible.

Should the reader happen to be in a district which, although hot, is at the same time always dry, he may relax certain of the precautions suggested in this article; but if it is damp (which most parts of the tropics are for long periods of the year), then, however careful he may be, he must not expect that things will always go well. All kinds of unexpected mishaps occur, but they must be dealt with by the individual as they arise.—Photography.

Rendering Contrasts

A VERY old device for developing negatives in which it is desired to record a long range of contrasts was brought up again at a meeting of the Royal Photographic Society recently. It is to remove the plate from the developer long before the action is complete, and either to place it for some time in plain water or to leave it in a dry dish. The developer already in the gelatin goes on acting in the most exposed portions until it is exhausted, when the action ceases: but in the less exposed parts it is not so quickly exhausted, and so the action there continues for a longer time. Unlike so many of the dodges which have been put forward for modifying the result by modification in development, this has an un-doubted action upon the density ratios. Provided the emulsion will stand the prolonged action of the developer without fogging, it is a method which is applicable not only to cases of extreme contrast, but also to negatives that are known to be underexposed. Of course, the plate should not be left exposed to the light from the dark room lamp; and the developer should contain sufficient sulphite to prevent any risk of staining from its oxidation, as the thin film of liquid on the plate is obviously more rapidly oxidized than a depth of liquid in a dish.

Using Inferior Papers

For some reason or another, we have had a good many complaints recently about the quality of some of the bromide and gaslight paper on the market. The wise buyer will take care only to purchase that which bears the name of a reputable maker, and to get it from a dealer who may be depended upon to keep his stock properly. But supposing the photographer to find that he has some poor foggy paper on his hand, the question arises, what is the best course for him to pursue? It is quite possible that, by giving a very full exposure, and using a developer to which has been added a much larger proportion of bromide than usual, the paper will give a clean image. If the bromide is added and the exposure image. If the bromide is added and the exposure is not increased, the results are likely to be too harsh. Half a dram of a 10 per cent. solution of potassium bromide to each ounce of developer may be necessary: the amount can only be found by trial. The result of such an addition is that, while the lights are kept clear, and the print has good gradation, its color will be very far from a good black. This is immaterial if it is to be

sulphide-tones: as such prints, if fully developed, give as good a sepia as a pure black will give. This is probably the best treatment for them: but if a black instead of a brown color is essential, then it can be got by redeveloping, without bromide, the print bleached as if for toning. But such methods are only to be justified as making the best of a bad job.

Mounts and Mounting

The style of mounting at present in fashion is so simple that it might at first seem as if nothing could be said on the subject. All that is apparently necessary is to get a piece of stout brown paper and dry-mount the print upon it. This, however, is not quite the case, as to get the best effect out of any print it must have a suitable setting, and to provide this is not so easy a matter as it might appear. There has been, I know, considerable difficulty in procuring suitable papers and cards during the war, but as these are produced in both England and America, it is to be hoped that we shall soon have a full range of tints and surfaces to choose from.

It does not seem to be generally appreciated that the appearance and tone-value of a print are greatly affected by the mount upon which it is placed, or else we should not see so many sepia-toned prints upon brown mounts, which nearly match their general tint, and hardly show where the print ends and the mount begins, thus causing a general flatness of effect which is far from pleasing. It is, fortunately, impossible to reduce mounting to a system and to give rules for the choice of colors, but there are one or two points upon which most successful workers are agreed. One is that the depth (not color) of the mount should never be as dark as the deepest tone in the print nor lighter than the highest light. Between these two limits there is a wide range to choose from, and even in everyday portraiture the general appearance of the work may be greatly improved by keeping this in mind. If we have only two mounting papers in stock, a cream and a rather dark brown, it is easy to see how much better some prints will look upon one than upon the other, and if we indulge in a combination of the two, one being used as a tint showing a narrow margin, we have an additional means of improving the effect. Some mounting papers have a different color or depth on each side, so that it is possible to get tint and mount out of the same sheet. A good effect, and one I am rather partial to, is to print with a narrow margin, so that the print is kept from running into the mount, and can be placed upon almost any suitable color. The margin being exactly the same color as the highest light of the print, cannot clash with it, nor with the mount itself. A trained eye will guide you to do the same thing with other colors, and the photographer who takes a pride in his work cannot do better than to procure a number of tints and mounts in various shades of brown, buff, cream, gray (not blue gray), and spend a spare hour or two in trying combinations of them with various classes of print. I hope that all the stocks of mounts with embossed colored borders are used up, and that they will not be revived after the war. If we are to have any fancy work, let it be confined to folders, as these can be thrown away if the customer does not like them. For cheap work ornate mounts will probably always be popular, but for anything which is intended to be artistic they are as much out of place as a heavy signature embossed in gold has been found to be. Plate-marked mounts had a long run, but they, too, have died the death; photographs are not printed from copper-plates, and a good photograph does not need any such false pretences to help it out.

Trimming plays an important part in the artistic mounting of a picture, and for this reason I am glad that most photographers have abandoned the use of "stock" mounts. No matter how careful one may be in posing or in placing the figure on the plate, there are occasions when the necessity for cutting a picture to fixed dimensions will be detrimental. When long panel pictures were in vogue it was frequently necessary to cut off a portion of the clothes so as not to exceed the prescribed limits, but now so long as the picture is approximately the size paid for nobody will complain. It may be pointed out that in many cases judicious trimming will help the composition, bad balance being improved by cutting away unoccupied space at the side of the figure and making the edge serve as a support.

It is obvious that for trimming of this class the old style of cutting shape is inadequate, and those who prefer to use the knife will find that one glass of large size with cross lines ruled on the under side will be more convenient and will answer for all sizes, as two edges can first be cut and the print turned and squared up by placing the two edges against the nearest two lines and cutting the remaining sides. Obviously it is not necessary that the cut sides should touch the lines so long as they are parallel with them.

The most convenient way of cutting prints is to use a trimmer. With this it is easy to get perfectly square corners and to repeat any given size by laying the print accurately by the rule at the side. The only precautions necessary are to see that the print touches the rule throughout its whole length and to press firmly on the print while cutting. If the print slips, the corners will be out of true. If at any time the trimmer be suspected of being out of adjustment, it may be tested by folding a piece of foolscap paper so as to give a sharp edge at the fold. Place this accurately to the rule and make a cut. When the paper is opened the edge should be quite straight across the sheet. If it be higher or lower in the middle the rule requires adjustment. This type of trimmer should not be used for heavy mounting papers or cardboard. For these a lever cutter should be used, and one fitted with a reliable clamp should be chosen. These cutters may also be used for prints, but require more care to get true rectangles. Some of the smaller sizes are unprovided with clamps, and when using these it is a good plan to press the print down with a glass cutting shape. This prevents the print from buckling and springing away from the blade.

Ovals and circles are best cut with the aid of zinc or brass shapes and a swivelled wheel cutter, a zinc plate being used to support the print. Many people find difficulty in using this simple appliance, due usually to a lack of confidence. The cutter must be kept perfectly upright and pressed firmly against the edge of the guide. Practice upon a few waste prints will soon give the necessary touch. The zinc plate should be kept quite smooth, or the prints will have ragged edges. An occasional rub with emery paper will do all that is necessary. For odd sizes in circles, I have found the Waterhouse diaphragms of a large lens very useful. The edges of the shapes must be kept free from notches, or the cutter will have a tendency to run into the print; but this is easily avoided by rubbing the notches

with the emery paper.

A mount-cutter's knife is a most useful tool, both for trimming prints and cutting card; with a little practice it can be used for bevelling sketch portraits, making cut-out mounts, masks, and many other purposes. It is best to cut upon a glass plate for paper, as a cleaner edge is thus obtained. The edge of a good knife will not turn upon glass, nor will the glass be scratched. Nearly all mounting, at least in the smaller sizes, is done by the dry method, which gives a good finish, obviating the necessity for rolling, and avoiding cockling even upon the thinnest mounting papers. The following points must be observed to ensure success: Both print and mount must be quite dry, or the print will stick to the plate, or at least show shiny patches where the damp places are. The heat must be adjusted the tamp places are. The heat must be adjusted to suit the tissue in use, and tissue requiring a high temperature should be avoided. During the war some very poor stuff was on the market and almost drove some people back to wet mounting. When cutting prints they must always be kept face upward. When there is a narrow strip to be taken off, it is easier to see the width of this if the crist is out face decreased. the width of this if the print is cut face downward; but if this be done a line of shellac will show round the edge of the print. If any of this gets upon the plate the next print will probably stick to it. Prints may be tacked on to mounts very neatly by using a narrow strip of tissue at the top edge of the print. This should be cut

a little shorter than the edge, so that the print will not have to be trimmed after attaching it. Wet mounting is so well known that no detailed instructions are necessary except upon points where the beginner is likely to go wrong. The ready-made dextrine mountants of the Tixit type are the most convenient to use, and have the advantage that prints may be unmounted at any time by damping between wet blotting paper, but properly made starch is as good, and just now much cheaper. Few people make good starch paste, but it is easy if done as follows: Mix the powder into a thick cream with cold water and see that any lumps are broken up; pour on absolutely boiling water, stirring all the time, until the paste goes clear and thickens; stir for a few moments longer and set aside to cool. Do not use until quite cold. Remove the top skin and take some of the paste into a small basin or saucer, so that it may be well broken up with the brush before spreading. Prints to be wet-mounted should be soaked in water until limp, then taken out singly and laid in a pile

on a sheet of glass. This should be stood on edge and allowed to drain well, after which any surplus should be pressed out with a dry towel. Paste the top print, lift one corner with the point of a knife, and pick up the print with the thumb and finger of the left hand, taking care not to take hold near the edge; take the other corner with the right thumb and finger and place the print in the correct position on the mount. If not quite straight, put the tips of the fingers firmly on the face of the print and slide it into position. Rub down with a soft, damp sponge or a sheet of dry, clean paper. Hang up until the surface is fairly dry, but do not let the cards curl; pile the prints up together and put under a weight until quite dry. If a mounted print dries flat it will not curl afterward; but if allowed to curl in drying, nothing will flatten it permanently again. While on the subject of curling, may I point out that only platinum prints and those upon plain salted paper—that is, without a gelatin or collodion coating—should be "tacked on" to a mount by the top corners only, as emulsion papers, although quite flat at first, are liable to curl with every change in the atmosphere.

Passe-partout mounting is a convenient way of preserving prints which it is not desired to frame. It consists of binding up a mounted print with a sheet of glass in front, with or without the addition of a cardboard back, to which rings for hanging or a strut back can be attached. Ready-prepared binding paper, which only requires damping, may be purchased in rolls, and furnishes the most convenient way of working; but any stout paper or bookbinder's cloth may be used. The proper way to bind is to cut the four strips to fit the front glass, and to attach them very carefully upon the face, then turn the glass face down, lay the mounted print and back (if any) upon it, redamp the adhesive on strips, turn them down on to the back, and rub well together. You will thus ensure a perfectly square and true edge on the front of the glass; the back does not matter.

Prints have sometimes to be mounted in optical contact with glass. This can easily be done by making a solution of clear gelatin, one ounce in a pint of water. This is poured while warm into a dish which will easily take the glass. The glass is then immersed, and when it has reached the temperature of the gelatin, is followed by the print face downward; the two are withdrawn together and contact obtained by means of a flat squeegee. When quite dry, the face of the glass can be cleaned from any smears of gelatin. During the whole operation the gelatin solution must be kept warm and quite fluid. If there is any tendency to set while in use, it is useless

tendency to set while in use, it is useless.

I have sometimes had to mount prints upon wooden panels, and for this I apply fish-glue to the back of the dry print, using rather a stiff brush. The only points to observe are that the margins are well coated with glue and that any bubbles are carefully rubbed out. Bromide prints so treated may be varnished without further preparation. Engravings or platinotypes require careful sizing with a gelatin solution to prevent the varnish from penetrating the surface.—B. J.

Development Papers and Desensitizers

The theory of the action of desensitizers on the photographic emulsion has been dealt with by Shepherd and Mees in their *Theory of the Photographic Process.* My notes do not, however, deal with the *general* action of desensitizers on emulsions, but rather with the troubles due to *localized* occurrences of desensitizers in photographic raw papers and baryta coating.

Unfortunately, owing to war conditions, these occurrences have been of a very serious nature during the last three or four years. When one considers that the allied paper mills, whose products enjoyed an enviable reputation for freedom from desensitizers in pre-war days, are not now able to produce the same high standard of quality—it is hardly to be wondered at that our British manufacturers have not yet succeeded in pro-

ducing a perfect base.

In many respects they have given us an excellent substitute for German products, and one can say they have creditably met many of the numerous requirements as to physical and chemical properties, such as dry strength, wet strength, curl, expansion when wet, freedom from blisters, smooth surface, etc. In the matter of desensitizers in the raw base they have not so far been quite so successful.

Shepherd and Mees give the following ratios for the desensitizing action of metals:

Copper .							3.6
Uranium .							4.4
Ferric iron							69.0
Mercury, me	erci	ıric,	gre	ate	r th	an	100.0

It must be remembered that these figures apply only to the particular plate used in these tests because, rather fortunately, emulsions vary greatly in their behavior to these desensitizing substances

Of the four metals given by Shepherd and Mees, the only ones likely to occur in practice are copper and iron. Taking copper first, it will be seen that the desensitizing action of this metal is only 3.6, and in actual practice the occurrence of copper compared to that of iron is very small. When it does occur, it is chiefly from the beater bars of the paper-making machinery or from the defective sorting of the rags. Nowadays its occurrence is rare, as naturally the makers have these two points under their control and obviate it. In cases, however, where it does occur, the following notes from a paper by Mr. Strachan on "Dendritic Growths on Paper," read before the Royal Microscopical Society, are worthy of note. In it he states that the particle of bronze is attacked by chemical residues in the paper—chief among which is sulphate of alumina with formation of soluble sulphate of copper. The latter creeps along the fibers of the paper in solution and the final result in the case of dendritic growths is the occurrence in the paper of fibers impregnated with basic copper sulphate.

The interesting point is the way in which the soluble copper salt creeps along the paper fiber, and, in the case of a photographic base paper, this spreading, both in the case of copper and

iron, produces a desensitized spot of very visible dimensions from an extremely small first cause.

It is, however, iron which causes the most trouble in base papers. From the ratio figures previously given it will be seen that its desensitizing action is very high indeed, being 69 against 3.6 for copper, or nearly twenty times as great. As to its occurrence—anyone who has had occasion to test materials for iron will agree that it is rather difficult not to find it. The dust in any large town contains sufficient to make it necessary to adopt pretty nearly bacteriological precautions as regards dust in order to obtain reliable and concordant results.

The usual method of testing for iron is to either immerse the paper in or swab it over with cotton-wool soaked in dilute potassium ferrocyanide and nitric acid. By this means the iron is converted into a ferric salt which gives a deep blue spot, due to the formation of Prussian blue. It is, perhaps, preferable to use the "swab" method, as by this means dust on the surface of the paper is removed, and only iron actually embedded in the paper is made evident.

A further method is to use ferricyanide of potassium and hydrochloric acid under the same conditions as previously, *i. e.*, with a swab, and although this test is one of ferrous iron, while it is a ferric iron which has the greatest desensitizing effect, yet one never meets a case in which the reaction cannot be obtained, and in testing under the microscope in the case of desensitized spots on prints this method is most useful. It, of course, immediately bleaches the black silver image and renders the detection of the particle of iron quite easy.

The most delicate test and one which very few papers will stand, is to use an acid hydroquinone developer, such as is used for the development of P. O. P., and to add to it a few drops of silver nitrate, for instance:

Hydroquinone '					16 gr.
Citric acid .					40 gr.
Sodium acetate	•		•	٠	1 oz.
Water					20 oz.

This is the stock solution, and, when testing, a few drops of 10 per cent. silver nitrate is added just before use. When using the solution, however, the utmost care must be taken, as this test is so delicate that touching the paper with the finger will often cause a black impression to develop.

In testing papers for spots, a microscope of the type used for the examination of half-tone prints is most useful. The sheet of paper is laid on a sheet of plate glass and the long projecting arm of the microscope allows of the easy examination of the whole of the surface. A miniature electric light bulb is arranged to throw a beam of light on the object, and if attached to the arm of the microscope keeps the portion of paper being examined well illuminated, even if the arm is swung about.

Although in many cases the spot resulting from the desensitizer is fairly large, the cause of the trouble is extremely small and is usually well embedded in the paper base, but with a micro-

scope of the type described fitted with a one-halfinch objective—a silver or platinum needletogether with a drop of ferricyanide and hydro-chloric acid, there is very little difficulty in getting at the cause of the trouble.

The method of testing raw paper for metallic spots, advocated by Valenta, is to soak the paper for about five minutes in from 5 to 6 per cent. acetic acid and then dry. Then re-soak the sheet in from 3 to 5 per cent. potassium ferrocyanide, and again dry. The iron spots assume a blue color, due to Prussian blue, while the copper spots are a brown color, due to the formation of ferrocyanide of copper.

This method, however, with the intermediate drying, is nothing like so convenient as the use of ferrocyanide and nitric acid, which is the standard method adopted by many papermakers

in testing their raw materials.

The same methods as regards detection are used in the case of spots occurring in the baryta coating, or in the emulsion itself, but the conditions under which the last two are manufactured are much more under control, and spots due to them are of rarer occurrence.

In a photographic paper the baryta coating serves two purposes: the first and most important of which is to effectively insulate the emulsion from any deleterious impurities in the raw base; the second purpose being to modify the shade and surface to suit particular tastes.

In endeavoring to produce a photographic sensitive paper equal to pre-war productions it is evident that manufacturers have had to utilize to the full the insulating properties of the baryta coating and to produce a baryta coating which will resist to the greatest extent the "creeping" action of the iron and copper salts present as impurities in the raw paper. Fortunately, in the case of development papers, it is not necessary to consider the reverse action; that is, the creep of the soluble silver salts into the paper as is the case in printing-out papers. Even when the utmost precautions have been taken with the baryta coating the creep of the desensitizer is not entirely prevented, and a minute quantity of iron can produce such a disastrous effect that it is necessary to take any possible steps to prevent this effect. The problem is not so difficult as it is in the case of a plate.

As pointed out by Shepherd and Mees, the action of a desensitizer may be described as catalytic, so that a very small amount of the desensitizer is able to continually destroy the latent image if given sufficient time to effect oxidation. In fact, if left for several hours in contact with the desensitizer, the latent image is entirely destroyed. This length of time, i. e., several hours, may easily occur between the exposure and development of a plate; but, in the case of paper, development practically always occurs immediately after exposure, so that the catalytic effect is at a minimum and the decrease in density round the spot or impurity is that due to the immediate oxidizing effect of the densensitizer present.

As stated previously, the decrease in sensitiveness, due to a definite quantity of iron in contact with the emulsion, is not constant, but

varies according to the particular type of emulsion, being different for an acid as against an ammonia emulsion and also varying with different proportions of the three halogens, chlorin, bromin and iodin present, so that one can use an emulsion which is affected as little as possible

by desensitizers.

In addition there still remains the possibility of the use of a negative catalyst, such as mannite, quinin or oxalates, to resensitize the emulsion. Although the amount of negative catalyst required is large in proportion to the desensitizer, because one must provide at any and every point a sufficient quantity to deal with the maximum desensitizing effect, yet by careful attention to the following points-

1. The insulating properties of the baryta coating;

2. The choice of an emulsion as little as possible subject to desensitizers;

3. Compensation of the desensitizer by a negative catalyst-

it is possible to produce a development paper on a base containing so many metallic impurities as to be quite impossible for direct coating with emulsion.

The tests which I have for your inspection are intended to show the practical application of the points just enumerated and may be classified as follows:

1. Raw paper tested with ferrocyanide and nitric acid, showing the numerous iron spots in the base.

Normal emulsion coated on the above base, showing the numerous desensitized spots due to

3. The perfectly even density obtainable with this base when due precautions are observed.

4. Sheets showing even density with one-half treated with ferricyanide and hydrochloric acid These sheets show that in the to bleach it. particular examples there are numerous iron spots in the base and are a further proof that a perfectly even density has been obtained on a

base containing a large amount of desensitizer.

I am glad to say that the quality of the raw base now being produced is a distinct advance on the samples shown; but in order to show the value of the methods indicated it was advisable to give examples showing their action under adverse conditions.

Still, for the production of a development paper as near perfection as possible, it is undoubtedly an asset to be able to make it as resistant

as possible to the effects of impurities in the base. As you are aware, in pre-war days an immense amount of photographic base was imported from Germany, and although up to the present our manufacturers have not quite succeeded in giving us a substitute equally pure, I feel sure that now they are in a position to tackle the problem; by methods unattainble during the war, they will soon reach the required standard and enable us to produce a development paper which will be equal to the pre-war standard as regards the raw base, and if possible a little better, because we can give added resistance of defects.—Walter C. MANN, in Photographic Journal.

Photographic Printing on Wood

A wood engraver of St. Louis who asks for a simple formula for printing photographs on wood from reversed negatives, is offered the following:

The sides of the wood block are rubbed with heated wax or paraffin. This is to keep moisture from injuring the wood. Three solutions are

kept in stock ready for use:

			N	o. 1				
Gelatin								16 gr.
Water	•	•	•	•	•	•	٠	1 oz.
			N	o. 2				
Silver nit	rat	e						80 gr.
Water					٠.			1 oz.
			N	o. 3				
Citric aci	d							40 gr.
Water								1 oz.

The white of an egg is beaten to a froth and left standing over-night.

To sensitize a block, take:

White of egg .				1 dr.
Gelatin solution .				₫ dr.
Best zinc white .			٠	_ l oz.
Ammonium chloric	le			5 gr.

Rub these to a paste in a glass mortar and while rubbing drop slowly into the paste:

Citric acid solution . . . 30 min. Silver nitrate solution . . . 30 min.

Paint this on the wood block very thin, seeing to it that the block is completely covered. Dry quickly in the dark and print under negative in the sunlight as usual, timing the print so as to keep a record of what length of time is best, which will vary with different negatives and different lights. Fix the print in the dark-room by holding it face down for a few minutes in a tray of hyposulphite of soda. Get this soda from a photographic supply house and you will find directions for use on the package. Wash the "hypo" from the face of the wood quickly and remove the moisture with damp chamois or blotter. Dry quickly. This will give a brilliant print with no film to interfere with the gravers. The wood is not injured by chemicals, if you are careful to wet only the surface of the block.

PATENT NEWS

Photochemical etching process. J. Rieder, Berlin-Steglitz. Ger. Pat. 309,376, 18.1.18.

THE surface to be etched is covered with a sensitized film of caoutchouc and asphalt, exposed below a negative, developed with acetone or a similar substance, dusted over either at once, or after a light etching, with a powdered low-melting resin, and gently warmed until the powder melts. The surface may then be deeply etched by the usual means; the resin is firmly held on the exposed and developed portions and protects these from corrosion.

Radiophotography: Negative plate substitutes for —. E. E. Burnett, Hayes Town, Middlesex. Eng. Pat. 125,490, 18.9.18. (Appl. 5810/18.)

A NEGATIVE plate substitute for use in radiophotography is prepared by coating paper with calcium tungstate emulsified in gelatin or other suitable medium, and then with a sensitive photographic emulsion.

Toning process for photographic silver prints. Graphikus-Ges., Hamburg. Ger. Pat. 309,447, 6.10.17.

By successive application of gold and selenium toning baths, so that the metallic silver in the print is almost completely replaced by gold and red selenium, a tone is produced equal to that previously obtained only by platinum toning or a combined gold-platinum toning, and in permanency the prints are superior to those obtained by the latter processes.



EDITOR, PHOTOGRAPHIC JOURNAL OF AMERICA:
Will you please inform me through the columns

of the JOURNAL as to following:

I have lost several roll films during the present hot weather on account of the emulsion swelling up and running on the film (temperature of water was 78° F.). Also the ground of film was full of a minute network of "crawling" of coating, possibly due to age, although the film was dated to July, 1920, the particular film being the Ensignette No. 1, made by the Eastman Company. Now I have developed other films, under conditions in which the temperature of the water or developer was fully as warm, if not warmer, and no such bad results were obtained. I think it is due to lack of hardener used in the emulsion in making this particular film. Now, I would like to know if formalin (and at what strength) could be used in hardening the film before development, or some other hardener? The film had swelled to about $\frac{1}{32}$ inch and proceeded to run off. I am wise to using cold solutions, etc., to prevent softening, but in this case results were different from any What I want to get is some hardener before. to use before development.

J. W. Forsyth.

Answer. The cause of your films reticulating is due mainly to the high temperature of the

water and the solutions used.

The following may aid you: We have developed plates in a developer at 84° F., the temperature of the dark-room being 89° F. Make up a hardening solution to the formula given on page 274 of the June number of this JOURNAL; also make a dipping solution in lieu of acetic acid, as described, as well as the fixing bath. Add 1 fluidounce of absolute wood alcohol, 97 per cent., to each 8 ounces of developer; also add the same to the dipping solution and the fixing solution. Allow about two hours to elapse before using either of them. Make a

solution of formaldehyde, 1 fluidounce in 16 fluidounces of water. Place the exposed film in this solution for five minutes. Then, without washing, place the film in the developer, moving the film occasionally. The development will be slow. Develop well in, then pass the film through the hardening dip; then, without washing, place it directly into the fixing solution. When fixed, wash it well in running water, not higher than 70° or 72° F. if possible. We think you will have no trouble with your films if treated as described. Anyway, keep the temperature as low as possible in all the operations.

EDITOR, PHOTOGRAPHIC JOURNAL OF AMERICA:
I am desirous of obtaining a blue-black color with my developed prints. At the present time the color is often a brown-black with a tinge of green. I shall esteem it a favor if you will inform me how I can change this color so that I may secure more uniformity of color.

IOHN EDWARDS.

Answer. You may obtain uniform blue-black prints by after-toning with the following toning solutions:

· A

Water 8 fl. oz.
Sulphocyanide of ammonium 100 gr.
Hyposulphite of soda 2½ oz. av.
Phosphate of soda 60 gr.
Chloride of gold 60 gr.

E

Dissolve the gold chloride in 2 ounces of water. As soon as the salts are dissolved by stirring with a glass rod, add the solution of gold. The liquid becomes blood red upon this addition. The prints may be placed in this liquid at once. When the desired color has been attained the prints may be well washed, in running water for half an hour, dried and trimmed for mounting. It must be understood that the prints have been well washed in the first place before toning is attempted.

REPLY TO ANDREW JOHNSON:

The waxing preparation for carbon printing is made as follows:

Spirits of turp	en	tine		20 fl. oz.
Yellow resin				6 drams
Pure beeswax				2 drams

Be sure the beeswax is genuine. This is important, because there is a preparation sold as beeswax which is paraffin colored with a yellow dye.

EDITOR, PHOTOGRAPHIC JOURNAL OF AMERICA:
The changing of the color of blueprints you gave a short time ago interested me very much. May I ask you to give a formula for producing a sepia color from blueprints. No doubt such a formula would interest many of the readers of your JOURNAL as well as myself.

J. LAFNEY.

Answer. Blueprints may be changed to sepia by using the following solutions:

A		
Tannic acid		60 gr.
Hydrochloric acid .		8 drops
Water		3 fl. oz.
В		
Water		10 fl. oz.
Potassium carbonate		$\frac{1}{2}$ oz. av.
Take of A		60 drops
Water		6 fl 07

Place the print in this solution from one to five minutes, wash the print well, then place it in B solution until the color desired is obtained.

EDITOR, PHOTOGRAPHIC JOURNAL OF AMERICA:
Can you give a good formula for waxing the surface of prints either black or sepia.
G. HENEY.

Answer. The following, no doubt, will suit your requirements:

White wax .			1 oz. av
Gum elemi .			1 dram
Oil of lavender			1 oz.
Pure benzine .			10 fl. oz.

Melt the wax and gum elemi in a suitable vessel. Apply this with a piece of canton flannel when cold and finish with a soft, dry cloth.

REPLY TO E. BARTON:

You may test for hypo in the wash water by using the following solution, which may be kept prepared ready for use:

Permangate of potassium .					8 gr.
Sodium	hydrate	(caustic			_
soda),	pure				7 gr.
Distilled	water .				8 fl. oz.

When testing, add 3 or 4 drops of the above to 4 fluidounces of distilled water. Allow some of the water from the washed prints to drop into this. If hypo is present the violet color will turn to a greenish tint. If no hypo is present the violet color will remain.

"America's Optical Emancipation"

Is the title of an illustrated article in the Scientific American of May 3, by Hugh A. Smith, which is of significant interest to all Americans who are in any way associated with the optical industry or with any phase of optics.

This article has the distinction of being the first story given to the general public of the pioneer work of the Bausch and Lomb Optical Company in developing the manufacture of optical glass on a successful scale in this country—a problem which has always baffled the industry in America. We regret that space will not permit us to reprint this entire article.

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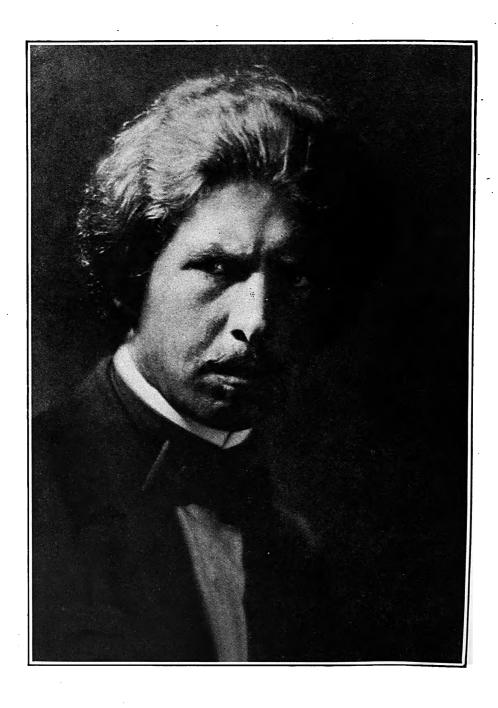
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By LOUIS FLECKENSTEIN LOS ANGELES, CALIF.



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THE EVOLUTION OF A PROFESSIONAL PHOTOGRAPHER

By LOUIS FLECKENSTEIN of Los Angeles

FIRST took up photography in 1896 when I was studying with an artist named Swaim, who, besides painting wonderful pictures, one day took me into his confidence and showed me many wonderful snap-shots made with a small bull's-eye kodak that he carried on his trips into the mountains. I was then living in Montana. These snap-shots, as he explained it, served as notes in his preparations of a sketch, and since my own time for sketching was extremely limited, I at once saw the advantage of owning a camera. I had a friend in the profession and from him borrowed an old view outfit and was instructed briefly in its manipulations. Hardly had I got started when one of those unexpected changes that upset all one's plans occurred and for the time being all our plans were changed. We returned to Minnesota. I continued my art studies and was further encouraged by the gift of a small camera from the fond wife

at Christmas time. This camera was called a Quad, being so named from the fact that there was space within for four 3 x 3 plates. It was a box affair with a fixed-focus lens. With it I acquired several trays and some chemicals, also a book of instructions. Being intensely interested, a dark-room was improvised out of a clothes closet, and the after manipulations conducted in the kitchen sink. At any rate a start was made, and I found the camera a most delightful companion, so much so that my brushes became more and more neglected, yet my interest in art became more intense. Painters were not numerous in the small town, and likewise photographers, except for a chum friend and one or two amateurs, whole-souled and good-hearted fellows I thought, but wasting their efforts on the dismal and uninteresting landscape. I liked figures in my landscapes. Not only figures, but figures close up, and from the close ups I saw

possibilities of bringing out a delightful tonal quality that my companions were unable to get. Thus I drifted into portraiture.

The Quad, by this time, had given way to a more pretentious outfit; first a 4 x 5, that did service for a year or so; then a 5 x 7 Premo with long draw and fitted with an anastigmat lens. By this time I had become somewhat known in photographic circles from having won frequent prizes in several of the competitions that were annual, or periodical, events of various publications. Prizewinning was not a difficult matter. though at the time I was often surprised at my good fortune and wondered at my success. It only occurred to me in later years that the pictorial idea was ever-present in my pictures, due to my previous art training, and also the fact that I was working out my own salvation, and, not knowing how the other fellow did it, there was a freshness and individuality about it that made it noticeable.

I joined a circulating album club that was conducted by Fayette I. Clute, and among the members was one whose work appealed to me very strongly because of its distinctiveness. I wrote to the member to inquire what paper he was using, and learned that it was a homemade product he called Kallitype. And it was not very long after that that I was also making Kallitype prints. One of the very first I made won a \$150.00 cash prize for me in the Bausch & Lomb Quarter Centennial Competition; and that, too, from the first negative made with a new 8 x 10 outfit I had just acquired. Thereafter, my winnings more than paid me for my outlay. Photography did not prove to be an expensive luxury. I used children for models a great deal, and had worked up quite a business on the side along the lines of portraiture.

The photographic salons, or exhibitions, also attracted my attention about this time, but my first attempts did not turn out very well. My prints were regularly turned down. Not knowing what a salon print looked like, or that it differed from any other kind of photograph, I was handicapped, so I determined to visit the salon that was

held in Minneapolis along about the year 1902 as near as I can remember. My entries had of course been turned down, and I knew the reason why as soon as I entered the exhibition room. These pictures were a revelation to me. Here were real pictures, not photographs, but pictures. How to make them was completely over my head. After pondering the matter a long time I talked it over one day with my friend Carl Rau, while we were enjoying our vacation together at a lakeside resort in Wisconsin, and we thereupon organized the Salon Club of America. The membership comprised the names of many well-known exhibitors. Circulating portfolios and criticism sheets made the rounds monthly. A genuine spirit of helpfulness prevailed and the organization proved of great benefit to all. The annual Salon, that had all but received its death-blow in the East, through the Secession movement, was again revived by the advent of the American Federation of Photographic Societies, which our club sponsored. As Director of the Salon Club it devolved upon me to appoint many important committees in those troublous times, which I did from the small inland town in which I was located quite successfully considering the fact that I did not know any of them personally, being guided solely by my estimate of their abilities of what they had accomplished in the Both organizations were of the greatest benefit to pictorial photography, and many of the old members thereof are still prominent and influential workers for the cause today.

As time went on my growing success with portraiture and my love for the work decided me to enter the professional ranks. At the same time I realized that to do so success fully required a larger field, and so, along with adopting a profession that had long appealed to me as the only thing in life worth while (just as it does most of the fans), I also decided to move to the one town in all the world that seemed worth living in—Los Angeles. I came here in the fall of 1907.

Now, as to my impressions of the various conditions and times through which I and my business have passed.

In the first place the professional photographer is not having an easy time of it. Why? Lack of organization. They permit the trust to operate a chain of studios, doing a coupon business, and make no effort to combat the evil. While it may be good business to put out coupons it is looked upon as a dishonorable method by most photographers, and it really is so, for why should an intelligent human being be solicited to patronize your establishment under a pretense that he is getting something he does not pay for? He does not get it. But the coupon buyers are foolish enough to think they are getting something of great value for little money, and it really seems that very few people know much about pictures. It is dollars and cents and the cents prevail. I used to visit a friend of mine who conducted a studio on Broadway, where he turned out three neat little folders for fifty cents. each containing three prints in three positions. His patrons were not poor people, not the laboring class. No. They were the swell dames that flittered up and down Broadway. They looked like a million dollars, but the way they roared and sputtered over those fifty cent pictures, and how like a criminal they made that poor devil of a photographer feel that he had swindled them, was terrible. The coupon men have a kick adjuster system everywhere, so things run smoothly. other thing that has injured the profession is the kodak print. A good many people have an idea that a studio portrait should cost no more than a kodak print. Some people seem to think a photographer has no other expense than his plates and paper, or that the operation requires nothing more than a button-pusher. The work of the progressive, present-day professional is one of education. He is teaching the public the difference between good and bad photography; the difference between a good likeness that is also a pleasing picture, one that is a work of art, and the hard, lifeless caricature that knocks about for a time and is then cast aside. In this connection, the Photographic Salon is exerting a powerful influence with the public in this direction, for it

brings home to them the great strides made with the camera and how, in reality, a Salon picture is just what a good photograph should be, and nothing more. The demand for a better class of portraits is growing and growing so rapidly that the old-line professional finds himself in a position where he must either change his methods or go backward. One of the big factors in bringing about this change is the softfocus lens. Rightly used, it renders tone and texture more nearly as the eve It is only in inexperienced sees it. hands that blurry or fuzzy images are set forth. A lens, however, is but a tool, and a modern studio that is not equipped with at least a half dozen lenses of various types is behind the times.

What do I think of the present condition of the profession? Have I not already said that it is improving? But there is still room for greater improve-What the profession lacks is a leader—some one who is able to bring about better conditions and cooperation between the members of the profession themselves. It is a notorious fact that artists and photographers, alone among the professions, have no system of cooperation. Each for himself and apparently content with what the syndicate studios and their coupon system allows as their portion. They all realize it, but it does not seem to have occurred to anyone, at least not in my generation, to have made any attempt at improvement or of altering these conditions. As to the future I see no prospects of a radical change from present-day methods for a long way ahead. There will be better pictures, improved equipment and yes, better prices, because you have already noticed the growing demand for the photograph that is different. The big studio camera and the skylight is not so necessary to the professional now as it once was, and possibly, ere long, we shall even have the motion picture camera as a necessary part of our equipment.

The professional studio is evidently looked upon as a sort of "court of last resort" by some people. The number of freakish, impossible things I have been asked to do would fill a volume.

Copy jobs are frequent, and some of them involve an immense amount of labor without much compensation, but it is a sort of satisfaction to be able to restore some of these old treasures. On one occasion, however, I was stumped when asked to copy the profile of a man and change it into a front view. Adding an absent member of a family to a group picture and taking out one from a group are comparatively simple operationsall that is necessary being the person or a picture of the person to be added. Not long ago a young lady came into my studio and asked me to photograph her with her Indian guides. They were present, she said, but as I could not see them I had to refuse her request. I have plenty of Indian pictures, so that the introduction of the "guides" would have presented no formidable obstacle, but in this case it did not seem to be the proper thing to do. So-called "spirit" pictures are common enough, but they are fakes. A well-known scientist came into my studio one day to show me a book that was illustrated with spirit pictures, all of them fakes, of course, but no amount of reasoning would convince this spiritual enthusiast that they were not genuine. Occasionally one runs across such a picture in nature that, with a little imagination, may resemble some disembodied spirit, but they are simply the result of an optical illusion. Like all "ghosts" and "spirits," they will not bear close inspection. Not long ago, I myself, while pointing my camera toward a tree, saw in the finder what looked like a nude woman nestling among the branches. I looked but could see nothing but branches and some moss hanging from them. However, there it was in the finder, plain as day; so I pulled the slide and exposed a plate, just to see what would happen. I made an enlargement, and one day, when a friend of mine called who is famous for his studies in the nude, I showed him the After studying it a moment he volunteered the information that some of the branches should be retouched out as they concealed too much of the figure. "What did you put her up in a tree for, anyway" he remarked. When I told him there was nothing there—simply an

optical illusion—he looked closer and simply said—"Well, I be darned!"

My remarks concerning the coupon studios and the lack of organization might be emphasized here. That concerns the financial end of the business. Of greater importance is to elevate the standard of the work. The pictorial idea applied to portraiture is the right Nine out of ten people that sit for their pictures will make the remark that they do not make a good picture. I tell them it is up to the photographer to do so. Working along pictorial lines, studying works of art, in fact, having the education of an artist, should be as necessary to the photographer as to the painter. It is no more difficult to pose your subject with proper regard for the essentials than it is to hash up a plaster cast effect. The old way is to depend on the retoucher to make a salable picture. The new way is to let the operator do it. By good photography I do not mean wonderful workedin backgrounds, extravagant poses and gorgeous gowns! By no means. Simplicity, the comfort of an easy, natural pose, and good expression, are all that is necessary. To make a picture fuzzy does not make it artistic, neither do make-ups, nor draperies and bric-a-brac. It naturally takes some time to arrange a pose with proper lighting, and during all that time the sitter is under more or less of a strain, so that, if a plate is exposed at this stage, it is likely to be a But it is right here that the important part of the process comes in. With everything ready for the exposure a brief conversation with your subject puts them once more at ease and relieves the tension and you get a good expression. Of course, with very young children this plan does not work, and it is not necessary. Give them time enough and interest them in something and they will pose themselves better than any artist can pose them.

I think the foregoing covers the ground pretty thoroughly and there is nothing more to be told, except, perhaps, to mention a few matters not exactly related to the business, though in reality its influence on the business is important.

I have always been more or less active

in matters connected with the Photographic Salon. Early in my photographic career the Salon made a deep impression on my mind, because of its bringing home the wonderful possibilities of the camera. To see good pictures it was necessary to visit a Salon, and, while it is true that most of the pictures are produced by amateurs, they are, for the most part, artists or having art training; but there are also many good portraits to be found, the work of wellknown studios, who appreciate the value of the Salon. The professional could learn much from these pictures. Contrary to the prevailing impression, a Salon print is neither a fuzzy thing, a daub in gum bichromate, or anything at all mysterious. The very best pictures are usually straight enlargements from straight negatives. But they are far from the average negative usually turned out in a studio. They are correctly exposed, correctly developed and carefully printed, so that there is gradation in the print and tone everywhere, the two things most attractive about photography.

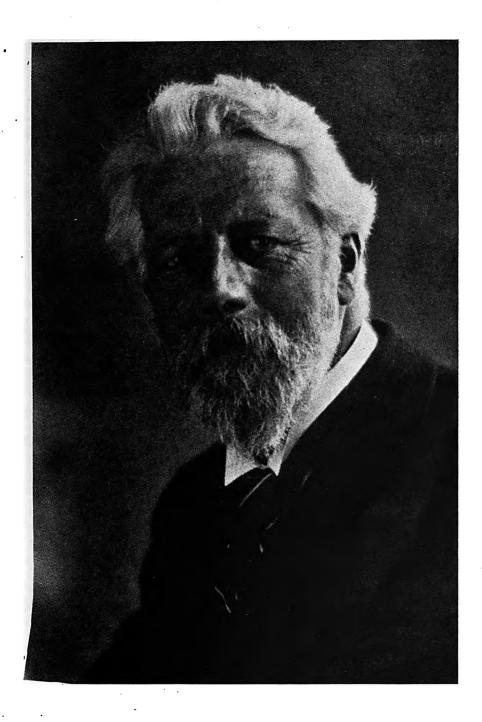
When I first took up photography I had neither the advantage offered by the camera club nor of any professional studio. All my photographic education was picked up wherever I could find it and resulted from my association with circulating portfolios and the interchange of ideas with fellow camera workers. After coming to Los Angeles I anticipated great pleasure in joining the club here, but there was no club. However, it didn't take long to get one started, and the old club I helped to organize is still the prinipal club here—that is, in point of numbers. Another

club, the Camera Pictorialists of Los Angeles, of which I have been director ever since its organization in 1912, is limited in membership, but is one of the best-known clubs in the country because of its activities in behalf of pictorial photography. As a result of this activity an annual Salon of International scope is held here, under our auspices, the second of which has just closed a successful career. The interest shown in this exhibition was not alone confined to enthusiastic amateurs. The professionals, many of them, were regular visitors, the motion-picture studios sent their laboratory force and camera men, artists and art clubs studied the pictures earnestly and the press pointed out the great educational value of the exhibit. Nor are the members of our little club hiding their light under a bushel. Their pictures are in constant demand by camera clubs throughout the land as one-man exhibits mostly, and the photographic Salons of London, Pittsburg, Montreal and Los Angeles accord them the fullest honors. The study of good pictures is of the utmost importance, for you get new ideas, and when you see good work it proves an incentive to do better work.

The public is not slow to appreciate the really good things in life, and while education is sometimes a slow process, they are gradually awakening to the fact that the new photography has charms and lasting, or living, qualities far beyond anything of the old methods. It is gratifying to the zealous few who are laboring toward this end to note the change, a substantial one, for with it comes steadily increasing business and better prices.

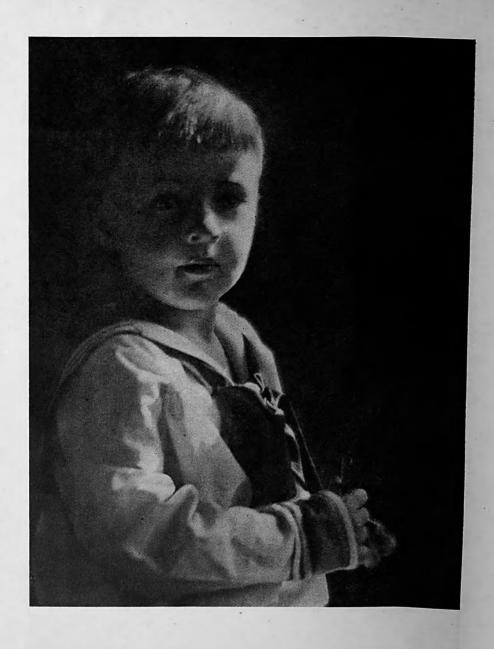
SIMPLICITY IN DESIGN IS THE TRUE TEST OF ARTISTIC VALUE. ORNAMENT IS NOT ART—ALTHOUGH ART MAY PRODUCE ORNAMENTAL EFFECTS THROUGH SIMPLE MEANS.

-DANIEL BAKER.



BY LOUIS FLECKENSTEIN / LOS ANGELES, CALIF.





BY LOUIS FLECKENSTEIN LOS ANGELES, CALIF.





BY LOUIS FLECKENSTEIN LOS ANGELES, CALIF.



SOME METHODS AND PRACTICAL SUGGESTIONS FOR STUDIO ADVERTISING

By "PROFESSIONAL"

A TIDAL wave of advertising is surging over this country, taking in almost every business and profession, and carrying to prosperity those who will pay to ride on it—leaving fossilized many who refuse to take passage. The expense of advertising is now as much a fixed element in general business as electricity, coal, or gas. Why not

in photography?

The thinking photographer is today facing this proposition: Shall we meet the conditions of business as they exist and inaugurate some systematic method of advertising to retain the trade he now has and to create new business; or, Shall he continue on the old lines and leave his field open to some new man with less photographic ability but with a keen business instinct to come into it and by judicious publicity win away his dearly bought success? This is no fancy picture; it is a fact that is being demonstrated all about us every year.

about us every year.

The progressive business man realizes that he must advertise or take his place behind the man who does—and in our own business its advantages are becoming more and more apparent. I believe that publicity is as necessary to the success of a photographic studio as the sunlight. It is needed by the successful man, to keep his business; and by the smaller man, to obtain it. Its advantage is not confined to large studios; it is equally valuable in smaller communities, but must be fitted in either case to the

conditions as they exist.

The business instinct is as important in the carrying on of a successful studio as the artistic instinct, and the business instinct of today is closely allied to the advertising instinct.

It is almost axiomatic that—

A good photographer and a poor business man will not do well;

A poor photographer and a good business man may do well;

A good photographer and a good business man will do well.

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It is well to remember, in this connection, that good advertising is retroactive; it improves the photographer every time; and the more he tells his public that his work is good, the more he comes to believe it himself and to make it so.

He finds that he must raise his standard of excellence to make good his assertions, and from the beginning of his advertising he will find his work growing better.

I remember a story of a plain girl who had been photographed many times, always with unsatisfactory results. Finally, she went to a man who was not only a photographer but an artist. That man idealized her face and made of its plain, homely lineaments a picture which showed the real beauty that was behind the seeming plainness; and when the picture came back to her she said, "Yes, it is I, but how changed! How can I ever live up to that ideal?" She knew it was herself, and her ambition was stimulated to live up to the idealization of herself which the artist had discovered. same theory applies in the use of advertising matter in connection with our studio work. The statements which we make stimulate us to keep to a high standard.

The public comes to believe in the man who advertises well, and will be led by his announcements to the studio where inferior work is done, rather than seek out for himself the better work. The merchant knows that a medium quality of goods well advertised brings better returns than better goods stored upon the shelves to wait a buyer. If you do not show goods, you cannot sell them.

It must, however, be remembered that advertising in a general business is not intended to sell goods; it is only meant to stimulate interest in them. When this interest has been excited the salesman must do the rest. Photographic advertising will not bring mail orders, nor

will it hold trade; but it should bring interested inquirers into your studio to see what you are doing. The rest is "up to you."

Good advertising is, to the photographer, like a good lens. It focusses him in public attention. It concentrates upon him the interest of his community. It makes his name a household word. and his products a household necessity. But we must always remember that publicity or advertising was never intended to revive a dead business: it is only to stimulate a live one.

Ability, the essential element of success, must always be present, before it is safe to look for permanent results; but with it and the right kind of publicity, the business is assured.

Is advertising undignified or unprofessional? By no means. Our money is invested in the plant; our time and study have been devoted to the work. and the output of our studio is something which every one wants at some time or other. The photographer has a right to make public his claims for recognition and support.

There are many kinds of publicity, and what will suit one set of conditions may not-probably will not-fit another.

Great care must be exercised in the preparation of statement, selection of medium and methods of publicity, if the best results are to follow. The subject must be studied from the viewpoint of the public, even more than from that of the studio. The style of expression adopted makes all the difference between successful and unsuccessful advertising; and the same announcement prepared by two different people will often bring widely different returns.

Proper advertising creates new busi-Much that would otherwise lie dormant in the photographic field is stimulated and by it developed into orders. The mother of a family knows, and the father as well, that they should have frequent photographs of the children and of themselves, but the everready thought that "tomorrow will do" puts off definite action until some other time. If the matter is kept frequently before them in some strong. dignified manner, its effect is soon felt

in the studio; and the more personal and persistent it can be made, the better will be the returns.

I believe its value is far greater in the creating of new business in a community than in stimulating new orders from our old customers.

Do the best work in town. Then talk about it. Educate the people of your community to appreciate the best, and let them feel that you stand for the best, the most modern and the most desirable

in photography.

Advertising is not of necessity newspaper publicity. Some men who spend large sums for publicity never use papers; and, as a rule, I believe that other media are better for the average studio. If, however, you do, it should be steady, regular advertising, not in spasms. It should be carefully studied out, and every insertion should be calculated to produce its effects in clinching some argument previously made, or in presenting some new phase of the The small man makes occasional spasmodic effort, then lets things take their course and wonders that his advertising does not pay. The more progressive man goes a little further, but stops short of the mark. Few seem to realize that the prime secret of advertising success is persistency, and that without persistency the money spent is almost wasted.

Advertising should not be confined to dull seasons, but should be used as a preventive of dull seasons. Its amount and kind should of course be regulated by season and condition of trade. Judicious methods of publicity, well carried out and fitted to the local conditions, will soon pay for themselves handsomely, and will bring to the ledger account new names from which a constant revenue accrues.

There are three methods that may, perhaps, be best applied to studio advertising:

Newspaper advertisements and local reading notices.

Booklet announcements and writeups.

Follow-up letters.

Newspaper advertising ments and local reading notices either by themselves or with other methods will best fit certain localities. Clean-cut, strongly written, handsomely printed booklet announcements, personally mailed, will best fit others. Or all three methods may be followed in many cases to great advantage. Follow-up letters will fit all, but must be adapted to local conditions.

In newspaper advertising there are certain general rules that may be followed in almost all localities.

Choose good mediums and style. Do not be influenced by "Policy." vate the editor or local reporter, and get all you can for your money, but pay for what you get and be independent. Set a pace. Hold to it. Change copy often, but stick to one position. Get your public into the way of looking every day or every week for something new; and when they find it, see that it is bright, snappy, and attractive; that it tells some story well. Use space enough and margins enough not to be overshadowed by neighboring advertisements, and do not try to say too much at a time. Be dignified in statement, and, as a rule, avoid the use of cuts; they are more often grotesque than ornamental. Read proofs carefully for errors, and insist on good display.

Local reading notices I consider better newspaper publicity than space in the advertising pages, but they want to be *local* to have any value. Every time your name is coupled with the affairs of your community, you are the gainer. If you photograph a prominent social event or a person prominent in affairs, see to it that some mention is made of it in your local paper. Pay for it, if required, but do not fail to have it published.

In the use of booklets, it is, I believe, of the first importance that they be rich and attractive in outside appearance and that there be no imprint, title or other mark on the booklet by which its identity may be established without breaking the seal. Curiosity is thus excited, and the seal will be broken, when otherwise the document might be thrown away without opening. When opened, the story should be so concise and logical as to hold the reader throughout. The matter of illustration is very important,

and a set of subjects should be selected having various interesting features, with a view to catching the attention of a wide and varied class of readers.

A leading thought should be picked out and everything should be written to it. I consider it a mistake to introduce a number of topics into such a write-up, and believe rather in holding to the one main topic, seeking to build up a concrete idea, and to leave a story impressive to the mind of the reader on some one thing—not everything. Let the type be plain and of good size, and, above all, have the cuts well made and see to it that the entire job is well printed. Nothing is more contradictory than a poorly prepared announcement of productions claiming artistic merit.

Something of interest to a community may be written about every studio; and if some special season, as Easter or Christmas, or some other festival time, be chosen as the prompting season for sending it out, there will be found ample opportunity for a fetching write-up, in almost any studio that can be named.

It is always safe to assume that the people whom you will address in this way are public-spirited, and naturally interested in everything that goes to raise the art standard of the community. This of itself will often afford a logical reason for addressing them, and a very strong series of arguments brought forward to show why they should be interested in your interpretation of artistic photography.

Remember, however, the remark of a prominent man who once said that he would "almost rather be accused of murder than of poor taste." Be careful that the effect is harmonious and in perfect taste, no matter how small the booklet may be.

A carefully prepared form letter referring to the booklet and adding an argument or two to the subject-matter it contained may well follow personally addressed booklets, and that again be followed by further announcements from time to time, three or four each year. A list of names should be carefully selected and followed up persistently; 500 or 1000 well followed up are better than 3000 only once. This will bring

far better results than an occasional announcement to a much larger list.

It is a fact not to be disputed that the public is influenced by the style of advertising adopted in any field of publicity, and the impression created by the advertising attaches equally to the product advertised; therefore, it is that good advertising suggests good photography; poorly prepared, careless advertising, the reverse. It is a fallacy to think that where no competition exists publicity is needless, for in my judgment the greatest good produced by the proper methods of publicity is in the creating of new trade, which without it would never materialize. To sum up:

We must do good, honest work, and in order to do it must keep up with the times.

First, last, and always, let people know we are alive and after their business.

Do not sit still and wait for orders to come after us. Get.out and stir about for them, and take every honest means to make the public of our community know that we are one of them.

When by persistent publicity of the right kind we educate our community to feel we are the only real, true thing in the bunch, our business will improve of itself. We shall then realize how vast an importance attaches to proper methods of publicity in the conduct of a studio. The photographer who fails to recognize the necessity of advertising is bound to find too late that a most important part of his education has been neglected.

COUNTERATTACKING WITH A CAMERA

A TRIP TO THE FRONT WITH A SIGNAL CORPS PHOTO UNIT

By E. R. TRABOLD PHOTO DIVISION, A. E. F.

THE captain came over to where we were standing beside the flivver and said, "Who wants to go to Cantigny?"

I looked at the sergeant and he looked at me; then we both said together, "I

will go.

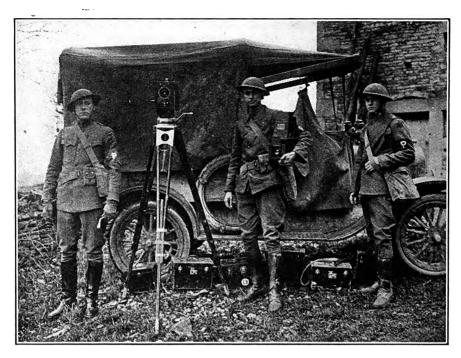
Each hoped away down in his heart that the captain would take the other one. The honor finally fell upon me to go with the captain, and I thereupon received instructions to get my cameras together and be ready to leave at an

early hour the next morning.

The sergeant was to take us up in the Ford to the observation post beyond Broyes. We were quartered about twelve kilometers from the front line and this necessitated our leaving at about two o'clock in the morning. No automobiles were allowed to travel during the day over this road, which was within sight of the German observation balloons.

The captain woke us the next morning shortly before two o'clock and said it was time to start. The trip to the front was uneventful, with the exception of an occasional call-down from the captain when I attempted to light a cigarette. Before leaving us, and taking the car back to the rear, the sergeant asked to be allowed to accompany us with his Debrie moving-picture camera, but the captain informed him that this permission could not be granted, inasmuch as his camera was too conspicious and would probably draw artillery fire from the enemy. We shook hands and I promised to be back at six o'clock, if alive.

The captain then started up a small path through the woods. On each side, and in lots of cases, this was blown away by previous shell-fire from the enemy. We stumbled along through the dark for about fifteen minutes, until I managed to fall into a shell-hole and



A SIGNAL CORPS PHOTO UNIT READY FOR ACTION

wet myself up a bit. Fortunately, I did not injure the camera in my fall and I managed to get out and catch up to the captain. We came out into a small opening in the woods, and in the center of this stood a fine old château that we were using for a signal-corps outfit. Below this château, and all around it, were batteries of big guns that now and then spoke with a sudden roar, shaking the château on its foundations and not adding much to my peace of mind. But as I had been to the front before I did not worry very much.

Before going any further I will tell you that I am describing the small part we did in the battle of Cantigny. We were attached to the First Division Signal Corps. We were going to try to get pictures of our boys going over the top, also pictures of our barrage and bits that would go down in photographic history.

We entered the château, finding there several officers and enlisted men. We then learned that the zero hour, when our barrage would be started, was five o'clock, and at seven o'clock, in broad daylight, our boys were going over the

top. We at once started for the observation post that was a short distance from the château. From there, as the day began to break, we could see Cantigny, which the Huns then held. We, from time to time, looked at our watches for the barrage to start, and it seemed to me that it would never come. At last a sudden quickening of the fire, which soon turned into a sullen roar, and the whirr, whirr, of our shell overhead, was bewildering.

As the light got strong you could view the doomed town, and from one end to the other nothing but dust and smoke arose. I started making pictures of nearby objects, such as tanks, doughboys and officers, that were looking through screens of brush at the bombardment, making notes of names and places, as this is one thing we have to do. We must have titles that are correct, also the time, date, etc.

The Huns were evidently taken by surprise, as it was some time before they made any reply. We afterward found out that our attack took place just when they were changing divisions. Time passed quickly, and suddenly the cap-

tain said the boys were getting ready

to go over.
"Come, Trabold, we will start a little

war of our own."

In order to reach the spot from where our boys were going over the top it was necessary to make a slight detour, so the Huns could not see us. The distance was about two kilos, and was through heavy woods that the enemy was now shelling at a merry rate. From time to time we halted in our rush, not only to catch our breath, but also to look through our woodland screen to see if we were going to be in time. Up to this time I had never seen any one killed or wounded, nor had I ever taken any real front-line first-aid pictures. Sooner than I expected I got this chance. I then and now wish that we never had to see or take such pictures; but this is the fortune of war and history would not be complete without it. As I rounded the side of a large tree I saw a soldier lying across a fallen tree. I sang out to the captain, and he at once went over and found that the boy had been wounded in the arm. It looked to me as if the arm was almost off; but the captain was an old campaigner, and this was not his first war, and, quickly breaking open his first-aid kit, he got busy. When he got the wound fixed up there hove in sight two stretcher-bearers, who quickly took the boy to the rear. We had lost precious minutes by this and really were in great danger, as the Hun shells were falling all around us. Rushing to the edge of the woods, we got a good view of our tanks starting, and I hastily snapped several photos of them. then tore over logs, trenches, and around shell-holes on our way; but we were not yet to reach the front, as we saw another soldier who was running around a tree like mad. Upon reaching him we could discover no wounds, and finally we concluded it was a case of shell-shock, which proved correct. It took four men to hold him after he reached the first-aid station. From this man we found out that his companion had been wounded, and the captain said it was our duty to find him.

We already had had several narrow escapes, and I said, "Say, captain, this place is not getting healthy."

He only laughed, and said, "Come on, We will have to look after this other fellow,"

After looking around a short time we found an infantry pack and, a short way off, the soldier, but he was past help, as the shell had killed him outright. While looking for this man, as the captain was parting some brush to get a better view of what lay beyond it. we heard the slight whistle of a shell, which denotes that it is about to land. I stood like a statue, awaiting death as it seemed that only a miracle could aid us. I landed three feet ahead of the captain with a thud; but, thank God, it was a dud! We stuck a pole, about eight feet in length, into the hole and did not find bottom. The leaves from the trees that the shell had cut in its flight fell softly to the earth, and I began to think, will we get out of here The fire grew so hot that we took refuge in a shell-hole for a short Then we started again to reach our objective. Soon we encountered stretcher-bearers with plenty of wounded. and again I got busy, making several shots here.

When we got to the front our boys were already on the way across, and I hastily snapped pictures. The light was against me, as the sun shone almost directly into my lens, so I had to make cross shots. Shells were bursting all around, and I secured several fine shots at them. In twenty-five minutes the boys reached Cantigny. The loss up to then was slight. Everyone was on his toes, and all were doing the part alloted to them in fine style. It made one's blood thrill to see our boys go along. Afraid? Not them. Why they rolled "bull" cigarettes going through the shellfire, and the signal boys laid wire behind the third wave and never lost communication with the rear for a minute, which is wonderful when you think that these boys are not there to fight but to keep our liaison in trim, and you can bet the Second Field Signal battalion can do it!

After making a lot of pictures along the front, the captain said, "Well, old man, we will try to get to the rear and get something to eat."

It was then about two o'clock in the

afternoon. If the trip to the front was bad, the trip to the rear was worse, as we now had to go through the Hun's fire, which they had got started. They were shelling our rear, so we could not bring up reinforcements. We went through a valley that was afterward named "Death Valley." Our course first led through some big timber, which was receiving a generous amount of fire, which was knocking the trees down in When we reached the quick style. center we were compelled to take shelter in a shell-hole, and it seemed as if the enemy knew we were there, as he landed four shells in quick succession around this hole, the last one covering us with

The captain said it was our move, "What do you say?"

I said, "Run like H—," and we did. We were "balling the jack" in fine style, and the captain had just leaped a large shell-hole, and I was all ready getting myself together for a spring, when—fluey! bing! a big one lit to my right, wounding me in the hand and knocking me into the shell-hole.

The captain stopped and said, "Come

on, don't waste time!"

I tried to, but found that my ankle was sprained; but I got out of that hole quicker than any one you may have seen and hobbled along. The path was being shelled so bad that the captain said, "Look for a dugout," which I did, as my mouth was almost stuck together. What I wanted was water inside and on my ankle. I spotted a big dugout just then, and called the captain, and I just fell into it, landing at the bottom in a heap. I got my shoe off, and we found we had just a small drink of water each in the canteen.

The captain said, "I would give twenty francs for a drink of good water."

With that he got up, and I claimed the twenty, as he had been sitting on a canteen of water that had been left in the dugout by some doughboy that morning. We both took a good swig from this and felt better.

Then the captain said, "We will now have a look at your ankle."

Well, we found that a machine-gun bullet had gone through this, but had not touched any bones, although I was sure it was all blown off. We used up the rest of our first-aid kit on this, and then decided that we would start once more to the rear. Well, we did not get more than twenty-five yards from the dugout when three shells lit right in front of us, too close for comfort, and we retreated to the dugout.

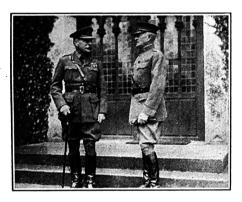


HUNTING LODGE IN BELLEAU WOODS-MANY AMERICANS LOST THEIR LIVES HERE

After waiting fifteen minutes, and no more shells coming at this spot, we again started. We had got about a hundred yards on our way and I was some distance ahead of the captain, when he called me back, as he had picked up a shell and wanted me to see it. This was a gas-shell case, and I had mentioned that I had never seen one. Well, I didn't care to come back, but, as the captain had asked, I did so, and this saved my life, as hardly had I got to the captain when a big shell hit the spot where I had been standing. Hearing several more coming that way, we concluded we would leave the path and take to the open valley.

Our course now led down hill, through barbed wire and a hillside pitted with shell holes, and also full of small brush, which made it hard going for me, but I sure did move and was close behind the captain when we reached the valley. There was a path running through this valley, and the Huns were shelling this at intervals. As we reached the bottom I noticed ahead of us a French soldier running and behind us an American officer. One shell struck near the

Frenchman and another one near the American officer. Both of these men were killed. We went over to both of them, but could not render either one of them any aid, so went on to the first-aid station, where I had my wounds dressed again. About this time old jerry got busy and began sending in gas shells near the first-aid station, and, for the first time, I found use for my gas-mask. They kept this up for more than an hour. I made quite a number of first-aid pictures at this spot. There was about fifteen men in front of this station that had died.



SIR DOUGLAS HAIG AND GENERAL PERSHING

It was then about four o'clock, and the captain said, "We can do no more here, and we have three kilometers yet to go before reaching the old château from which we had started in the I had left a camera and morning." several other things there and we wanted to secure these to take back to our station. We now had to cover an open country under observation from Hun balloons and airplanes. These kept circling overhead, directing their artillery fire, that is, giving them the range. We had to pass one bad spot where we had an ammunition dump that the Huns had blown up, and this was in action all day long, causing us and all the stretcher-bearers to make a wide detour. Well, at last the château hove in sight, and I was one tired but happy man.

We figured on something to eat, but, sad to relate, they didn't have a thing, as the ration wagon hadn't yet got up. They were waiting until darkness so

they could come up to the front. All rations were brought to the front this way, as it was dangerous to travel these roads in daylight. We here secured a ride to Mesnil St. Firmin, with a French officer, and at this village found our car where the sergeant had left it in the morning. While we were photographing the front, our lieutenant and the sergeant had been busy in the rear, and they had photographed, in both movies and stills, all prisoners and other interesting things that go to make a photographic history of the war.

At six o'clock we arrived at Bonvillers, our headquarters, and were greeted as long-lost ones, as they thought we had been killed. After a good meal and a night's sleep, I can say I felt better, but my foot was badly swollen, so I missed going to the front the next day. The sergeant got the trip and I wasn't a bit sorry, as, honestly speaking, I hadn't

lost a thing up there.

My duty now was to get my plates back to the laboratory, with correct titles, etc. You are expected to get the pictures back to the laboratory at once, as some might contain news that the papers and also the Government could use for military or propaganda purposes in our own and the allied countries. The first thing to do is make out the titles, and these must be correct to the smallest detail: The date, the time when taken, and the name of the place; also the



PRESIDENT WILSON AT HUMES HAUTE, MARNE CHRISTMAS DAY, 1918

name of the company, regiment, division, and all other things pertaining to what the picture may be; then mark

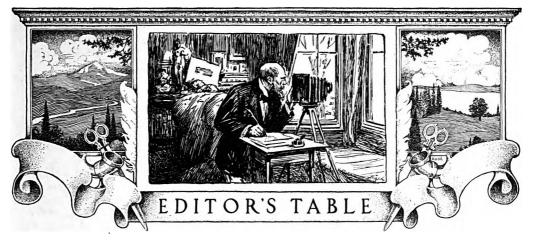
all plates or films with your own number and the title with the same number to correspond to that of the plates. This is for the information of the darkroom man, and also for the man who handles the titles and plates after development.

At the laboratory in Paris we use quite a number of Cooper Hewitt tubes. We use these for enlarging, for making prints with the photostat, and for printing purposes. They are the French type of light, and differ a trifle from our American make. But a year ago we secured our well-known American tubes for enlarging, and they are a fine light for this work. We have three enlarging rooms at the Laboratory and they turn out a great number of enlargements of all kinds for military purposes. are also used for making identification pictures of officers, Y. M. C. A. workers and all men attached to the army as clerks, etc. I would like to send photographs of these lights and the manner in which we use them. This would be a great help to photographers, as we have some men that are expert with this type of light and the manner in which they

have them set up would be of general interest to all photographers.

I cannot illustrate this article with the pictures that I would like to, as all pictures are the property of the Government and have to be censored; but later on, I am assured, I will be given any pictures I wish to use, and then you will see some real war pictures that will interest everyone, and then you will realize what the war photographer really did do.

THINGS ARE MOVING SO RAPIDLY JUST AT PRESENT THAT THE MAN WHO SAYS "IT CAN'T BE DONE" IS BEING INTERRUPTED BY SOMEONE DOING IT. —The American Bulletin.



THE PHOTOGRAPHER'S "SEASONS"

OR the great majority of professional photographers the year is divided into two seasons, one of preparation, the other of actual production. The analogy, of course, is seen in the natural order of seedtime and harvest. Very few, if any, studios are kept busy all the year round. The later months of spring are usually, from a business point of view, dull or quiet. The summer months are loosely occupied with enforced recreation, or attendance at the conventions of the craft. The early fall months are devoted to active preparation for the winter business, the business season proper beginning with October and ending with April. With certain exceptions, therefore, due to local conditions or special classes of trade, the photographer's success or failure depends upon his output during six months of the year.

Wise photographers appreciate this inevitable division of the year. Their wisdom is apparent in the way they spend the season of preparation. The success is seen in the quantity and quality of their work from October to April.

The season of preparation for 1919 is over. With October begins the season for business. The wise photographer has enjoyed his time of recreation, has garnered a goodly store of experience and instruction from his fellow-workers at the conventions, has put his plan of

campaign for 1919-20 in operation, and within the next thirty days will begin to feel the pulse of the new season's business as the current of work flows in and out of his studio.

Business success is not a matter of chance, but the normal result of intelligent thinking and working. The few who appreciate this do not need any reminder of the fact. But the many are remiss and "let things slide" unless they are pushed. We write for those who have "let things slide." It is generally conceded that we face today a season which promises an abundant business harvest. Our country is now more prosperous than at any time in its wonderful history. The photographer should not lose sight of the fact that his productions are, in a great measure, luxuries. People can do without photographs, as the hard times have clearly proved. But when money is plentiful, as it is today, photographs are desirable luxuries. It is not difficult to persuade people to be photographed. The question of price is no longer a question of importance. The prime difficulty is to make photographs of such a quality or style as will demand the highest possible price. The successful photographer finds his patrons of today only too willing to pay a good price for his work, if he can offer them something of unusual value, something exclusive in style or finish, something out of the common in its attractiveness or interest.

In such times the largest measure of

success comes to the photographer who puts the greatest amount of intelligence and forethought into his plans for the business season. Those who enter upon the season now opening with a carefully thought-out and well-matured plan of campaign will undoubtedly reap the reward their preparation has deserved. On the other hand, those who have let the season of preparation pass unheeded will undoubtedly find business slow and unsatisfactory. The public of today looks for the best in everything, regardless, comparatively, of any difference of a few dollars in the price asked.

To those who do not feel prepared for what is before them our counsel is: Make up, as far as possible, for lost time. Read in the papers presented on other pages the methods and ideals offered by business men who are fully awake to present opportunities. See in the work reproduced in our supplements what others have done to meet the demand for photography of the better sort. never too late to mend, but those who would benefit by the season now at our doors should lose no time. Does the business establishment need attention? See to it today. Are the styles on display lacking in attraction, or interest, or value, or quality? Strive, today, to remedy the evil. Has the important detail of publicity or advertising been overlooked or unappreciated? Put forth the best endeavor, get help if needs be, and see to it that your facilities are made known to the people.

SOME DAY

We are all of us prone to put off the doing of a thing till tomorrow, or to that more convenient "some day"—a day that, ever coming, never comes—and when a good idea strikes us the most natural thing in the world is to make a mental resolve to carry it into execution some day; not, mark you, now, but always "some day." It is so delightful to a large class of people to sit down after the toils and cares of the day, with slippered feet and palms outspread to the fire, to give one's self up to the dreamy wanderings of the mind, conjuring up the most

fantastical creations. Yet of the thousands who daintily entertain themselves in this way how many are there who will then and there pull out their pocketbooks and make a note of it with a resolute determination to take immediate steps to test the value of the idea. And how much fewer are those who are like some great novelists we have occasionally read of who have risen from their bed in the middle of the night to commit to paper some happy thought or intricate plot that has occurred to them: or again like some great inventors who have no sooner thought of an idea than they have rushed off to their workshop or laboratory to put it into execution?

No: it is so much easier to put off the doing of a thing, whether it be a duty or an intention, and the result is that most men's lives are characterized by a prodigality of intention and a parsimony of achievement. They are like that character of whom Voltaire said, "He was an oven that was always heating up, but which never cooked anything.' days, weeks and months pass by, and their lives are wasted in purposing and intending. The promised "some day" never comes, new duties, new cares, new ideas and new intentions crowd in upon them, and the great intentions of yesterday and the day before are altogether forgotten. Great occasions are waited for instead of the first opportunity, however small, being seized and employed. The work which comes easiest and handiest is always the first to be taken up, instead of following the advice of some of the wisest philosophers. to do that work first which is most repugnant to one's feelings, and by its accomplishment clearing one's mind and leaving it free to think of more congenial things. By shelving troubles we are only laying up a store of lumber which must be taken down and dusted some day, and that some day is probably the very day we had set our minds on carrying out a great idea.

Of course, there are always plenty of excuses for not carrying out our intentions; in fact we think excuses are more plentiful than ideas with some people. Let any employer go into his office or workshop and proceed to question each

man on the reasons why such and such things are unfinished, and he will get the same old excuses, which are too often the same old lies, from everyone. And they will all agree on one point the hoary and decrepit excuse, old as the world itself, that they "had not Go where you will, no matter what the nationality, no matter what the industry, it is the same prompt reply, "had not time." There is not a language on the face of the earth that has not an idiom for this expression. Children learn it as soon as they learn to talk, it is their most natural excuse for not learning their lessions; and as they grow up and go out into the world the habit clings to them, so that this ready excuse is ever on their lips. Even when men go into business for themselves and fail, the most common excuse at the Bankruptcy Court is that they had insufficient time—they had not time to make a success of it, had not time to pay, for the creditors were too pressing.

Seldom will you find a boy or man who will honestly own up to the true reason, as a rule, for incompleted duties. He will not admit that it was too difficult, too wearisome, or too distasteful, but always and only that he "had not time." He conveniently ignores the inconsistency of coming in late to his duties and knocking off early, taking a day off for

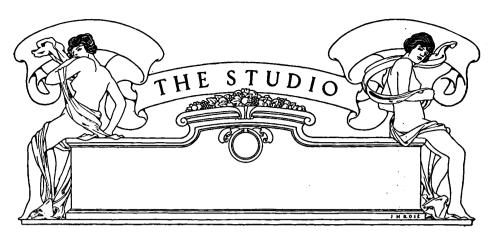
any paltry little ailment, and eagerly taking every holiday that the saints and Sir John Lubbock have given him. He always finds time for meals, always time for a gossip with his fellow-worker. always time to dream idly over his desk and bench when the employer, or superintendent, or foreman turns his back; such men are always ready to go to the pay desk to draw their wages, and some find ample time for a Saturday-to-Monday debauch. Even those who would make pretension to being staid and respectable members of society find time for spending their evenings at silly entertainments, in foolish games, in desultory and purposeless reading, or in that luxurious dreaming over the fireside of which we have already spoken, toying with good purposes, turning them over in their minds as an epicure rolls a sweet morsel under his tongue, always dallying and never doing.

This absence of determination and resolution and the adoption of a vacillating, irresolute habit leads to the waste and loss of all that is valuable in life. It reveals an utter absence of force and character and that energy which in any pursuit gives earnest of success. It is better to resolutely decide to do one little thing now and do it well than to be always dreaming of the big things we may do "some day."

OPPORTUNITY

Master of human destinies am I.
Fame, love and fortune on my footsteps wait;
Cities and fields I walk; I penetrate
Deserts and seas remote, and passing by
Hovel, the mart and palace, soon or late
I knock unbidden once at every gate.
If sleeping, wake,—if feasting, rise before
I turn away. It is the hour of fate,
And they who follow me reach every state
Mortals desire, and conquer every foe
Save death; but those who doubt or hesitate,
Condemned to failure, penury and woe,
Seek me in vain and uselessly implore.
I answer not, and I return no more.

JOHN J. INGALLS



PRACTICAL PAPERS ON STUDIO WORK AND METHODS

Managing the Sitter

The first step toward managing your sitter is to have perfect control of your own feelings; no matter what worries or annoyances you have to encounter, do not take them into the studio with you. Man is an imitative animal, and in the great majority of cases unconsciously copies the temperament of those surrounding him in a greater or less degree, according to his own strength of character. Therefore, it is very necessary that the photographer should cultivate a quiet geniality of manner, adapting his degree of freedom of speech and manner to that of his sitters, taking care to avoid an excess of familiarity with those who have an idea of their own importance or a patronizing air with those of more modest manners. To put it briefly, the operator must be "all things to all men" (and women), and should bear in mind that "As iron sharpeneth iron so is a man's face brightened by the countenance of his friend."

One person at a time is quite enough to manage, and any friends who accompany the sitter must not be allowed to remain in the studio while the sitting is made. If possible they should be induced to remain in the receptionroom, but usually it will not be easy to arrange this, and one at least will be allowed to enter the studio. I have always made a rule of having a screened-off corner with a comfortable chair, to which I escort the friend as soon as I have welcomed the sitter, taking care that the friend cannot peep out and be seen just as an exposure is being made. There is a good reason for this; it prevents the friend from criticizing the pose, seen from a totally different position from the camera, and also prevents conversation, which often results in giggling. With children, it is, of course, necessary that they should be accompanied by an adult, but only one should be allowed. If a mother and nurse come, try to get the mother to retire behind the screen, as the child will usually behave better with the nurse, who will not try to excite it. A whole family party in the studio usually means a resitting after a lot of valuable time (416)

and plates have been wasted. Even if a family group has been taken, the members should be shown out if separate sittings of any of the children are required, and it is sometimes politic to ask permission to make a negative or two of a pretty youngster, even if not ordered. The parents feel flattered by the compliment, and go away feeling that the photographer is really a man of taste.

We now come to the practical work of making the portrait, some people call it a "picture," and we should endeavor to make it worthy of both designations. To this end it is necessary to make a rapid survey of the sitter's features and figure so as to get the best result possible. It is said that Reynolds always wanted to dine with a person before he painted his portrait, so as to get a true impression of his appearance, but the photographer is not so fortunate, for he has only a minute or two to decide upon his course of action. I will endeavor to indicate a few of the points to be observed. There is not one person in a hundred whose features are even approximately symmetrical, so that it is necessary first to decide which side of the face is to be turned to the light. The nose will often appear quite straight if the head be turned one way, and either aquiline or retroussé if turned the other. As a rule it is advisable to choose the straight side unless other conditions militate, in which case the aid of the retoucher must be sought. With nine people out of ten the left side of the face is the most perfect, so that the studio should be arranged to take negatives with the light falling on the sitter's left

The eyes are usually uneven in size and sometimes in height; the best result can be obtained by having the larger or higher eye nearest to the camera. In cases of a decided squint the abnormal eye should be turned from the camera and brought well into shade, so that it can be more easily corrected in the retouching. If the profile is fairly good, one or two positions of it should be taken when the sitter is afflicted in this way.

If the sitter's neck be short it can be made the most of by lowering the camera considerably,

while with a long, scraggy neck the camera should be well raised. The height of the camera has an important effect upon the rendering of the nose. A long nose is shortened and the upper lip well shown with a low camera, while a snub nose and long upper lip is better rendered from a higher position. Tilting the head up or down will give the same effect, but this would interfere with the pose of the head and probably spoil the eyes and forehead. A small, receding forehead should be inclined toward the camera, while the possessor of a massive one may throw the head well back. In both these cases the pose will probably be a natural one to the sitter.

The hands are a constant source of worry, and many photographers now look the difficulty boldly in the face and take bust portraits almost exclusively. If they have to be included in the picture the hands should be made as unobtrusive as possible, and care should be taken not to let them come too far forward, or they will appear larger than they really are. It is usually recommended to use the swing back to bring the hands into focus without stopping down the lens, but this is not a good plan, as it necessarily renders them on a larger scale than the rest of the picture. It is always desirable to use as long focus a lens as possible for sitting figures, so as to minimize distortion of this kind. Of course, some sitters have small hands, and then there is little difficulty in dealing with them. One position is always to be avoided, that of having the fingers interlaced while the hands are lying on the knees. A book or flower may be held so as partly to hide the hands, but this device is rather hackneyed. A long chain or string of beads falling from the neck into the lap often affords an opportunity for a graceful arrangement of the fingers.

Full-length portraits are now rarely taken unless for the express purpose of displaying the dress or uniform. For these the camera should be raised, so that the lens is about level with the breast of the sitter—say, 5 or 6 inches below the chin. Care should be taken that the body is well balanced upon the feet, which should not be placed evenly, but one a little before the other; in military terms, the sitter should "stand at ease" and not at "attention." At the risk of being considered old-fashioned I strongly advocate the judicious use of the head-rest for standing figures, as not only are "moves" reduced to a minimum, but it prevents the sitter from dropping into a slouching position. I prefer not to place the rest behind the head, but The rest is also very behind one shoulder. useful when making dancing poses, as it enables a position to be held with one foot in the air. The ironwork should be fainted a fairly light gray, so that it is lost in the background and is easy to work out on the negative. If black or dark green as usually supplied, it is difficult to get rid of.

Young children present a different set of problems from adult sitters. Their features do not require so much consideration, and the lighting is usually full. The great points are to keep them still and to secure a happy expres-

sion. They should not be allowed to curl themselves up with one or both legs drawn up under them, but otherwise they will find their own poses, from which the photographer should make his choice. The great thing is to get the child's confidence as soon as it comes into the studio, and to keep the camera out of evidence as much as possible. To attempt to work with children as one would with adults is to court failure. Many of my best child pictures have been obtained by focussing upon a cushion or similar article, placed where it is intended the child to be, before it came into the studio at all; then the plate was inserted, the slide drawn, and the child coaxed into position in an innocent sort of way. Then the exposure was made, using a rather long release tube or cable, and while the child's attention was otherwise occupied the plate changed and the process repeated. A little table at which the child can stand is an excellent accessory, as if a toy be placed upon it in focus the child will usually go to it of its own accord; if spoken to it will usually look up with a pleased expression, and the exposure is instantly made. I generally find that I can get three sharp negatives out of four exposures when working this way. The "little bird" trick is not a bad one; but there should be no deception, the bird should be forthcoming. have made hundreds of negatives with the help of a cheap toy, consisting of a small metal bird perched on a bulb which contained a water warbler, worked by a rubber tube. The bird flapped his wings and opened his beak while singing. The plan was to tell the child to look for the bird, and to give a note or two on the warbler, and immediately after the exposure to show the bird in action for a few seconds. It was then hidden and the child told that it would come back if he were good. Alas! a little sitter found it when I was not looking, and effectually ended its career. It was probably of Hun origin, and, I hope, cannot be replaced. However, the idea remains, and it might be possible to make a substitute. It is a good plan to keep a few cheap toys so that a child can take one away with it, especially if a resitting may be necessary, as the child will be willing to pay another visit to a place where toys are given away. Big toys, such as Teddy bears, horses, etc., are a nuisance, and the toy should be used to attract the child's attention and not given to it until the exposure is made. Before I learned this I have had a child march away with it into a dark corner and sit down to play with it, any attempt to entice it out being hopeless. I have said nothing about posing either adults or chil-dren, as little useful information can be conveyed by words. By the study of paintings, engravings, and the work of good photographers much can be learned and a general idea of what is graceful and artistic obtained, then when the sitter arrives one is not at a loss for a pose. there is any characteristic mannerism about the sitter it should be preserved; if a man habitually holds his head on one side it is a mistake to put it straight, as it would be to make a man who stoops slightly stand bolt upright.—PRACTICUS, in British Journal of Photography.

Sketch Portraits

ONE of the things that the sketch photographer needs to be careful about is the manner in which the sitter is placed on the plate. Recently we saw an instance of this in the head and shoulders portrait of an army officer. The camera was evidently much too high, and the resulting picture gave the impression that one was looking down upon the sitter's head, while at the same time, due to an uncomfortable pose, the sitter was falling forward, as it were, into the picture. Whether that particular picture satisfied the sitter we do not know, but it should not have satisfied the photographer. Many photographers when posing their sitters for a sketch portrait, pay little or no attention to the general attitude of the body. Yet if this is neglected it is next to impossible to obtain a satisfactory pose of the head. The arms frequently cause trouble in this way, and if care is not taken give a humpy or round-shouldered appearance to the sitter. The showcases of many photographers furnish abundant evidence of the fact that the trunk of the sitter's body was not posed in a comfortable position or even a natural one; though only a head and shoulders portrait is to be taken, it is impossible to obtain the best results if attention to these minor details is not given.—British Journal of Photography.

How Do They Do It?

In looking over the business conditions of the past two years, we are glad to note that there has been a very general improvement in photography, and there are probably more photographers who have made money during this period than ever before within our memory. But here and there we find one who has not met with success, and we are filled with curiosity to know how it happened.

In the magazines we read articles on the new ideas or sound business principles that contribute to success, but we have a very strong suspicion that once in a while it might be of advantage to many of us if we would take but a moment to consider the failures. The value of contrast to teach a lesson is well known, as, for instance, we instinctively hold up to our children those who have bad habits as a warning of what they are drifting toward. We find that such examples have much more effect than to point the finger to the goody-goody boy or girl as the model that we would have them follow. They usually stick their tongues in the corners of their mouths and all of our good advice has about as much effect as rain on a duck's back.

How many times has a hunch-back been pointed out to us, or an old man with bent back and shaky legs? At once we straighten out our shoulders and make a determined effort to hold ourselves erect. Or there has been a child whose teeth were green with moss and reeking with decay. One comprehensive look has had more effect in making us brush our teeth hard and often than all of the beautiful teeth in town. Or it may be the tramp, whose clothes are stained with grease and dirt and torn or worn by pure neglect. My, how we shine our shoes and brush and scrub at the very thought that we might look like that

specimen.

It is very difficult to reduce to any set of rules the way to success, for just as we have formulated the points in the careers of a number of examples that all of the successful ones have in common, we find that the next example has made a success of his business and has apparently broken every rule that we have come to consider indispensible. One fellow gets his one way and another gets his another. But what about the fellows who never seem to get it? Why not take a few minutes off to see what these specimens have in common, if anything. Naturally, we go to the individuals themselves, and first we catalogue all of the factors that we can find that hear on his case

bear on his case. No. 1. A very pleasant fellow; not at all bad looking, but, on the contrary, rather handsome. Neat in appearance and a congenial talker. Looks exactly as though he had ability, and some of his work shows quite a decided merit. And yet he never gets anywhere. He is always in debt; always has hard luck; even after a spell of good trade he is short of money, and his bills do not seem to be paid up any closer. How does he do it? Does he gamble his money away? Does he live in better style than his business can afford? It appears such a difficult case that we look carefully into the slightest details of his business and domestic habits. We find that he is lacking in purpose and starts a job but seldom finishes it. He can make the pictures, but when he sees that he has a good negative his interest goes dead and the drudgery of finishing and getting the money for the work holds no interest for him at all. His sole idea of credit is to enable him to get into debt. When trade is forced on him and he makes some money, he will pay up his bills and then lie awake nights to think up something he can buy so as to get into debt again. Not that he needs it; no, it seems to be that he is charmed with the idea that his credit is such that he can buy more. When he does have some hard luck, he is down and out for invariably he is head over heels in debt just at that particular time.

No. 2 is just plain, ornery, lazy. He does not want to work at his business, although he is known to put up quite a splendid exhibition of work at some job that does not bring him a cent of profit, such as fishing or camping or raising fancy chickens or dogs. But his studio is unkempt and lacking in every vestige of attractiveness. No taste nor beauty. Just bare fittings with a few pitiful attempts at decoration. And there is a clinging odor of stale smoke and several little nests of cigar and pipe ashes in the corners. But we have seen this duplicated in some successful studios.

What is the matter with this fellow? We find that he has grown up with the idea that he ought to be supported and kept in comfort by some one else. By birth and ability he should not have to work, and he points to other men who are independently wealthy, and they are his models. Or else he is deceived in their apparent independence. He really does not want to succeed by his own efforts, but wants success thrown at him so that he cannot even dodge it.

No. 3 is a splendid workman. Active and hustling and enthusiastic. Full of ideas and possessing no little originality. But he never gets ahead. How does he do it? This case is not so difficult to analyze. We speak it softly. He has pipe dreams. He sees himself the most famous photographer in the country, with all of the rest of the profession kneeling at his feet begging and pleading for him to impart some of his knowledge to them. But in his high and mighty pride he spurns them and haughtily informs them that he gained his great skill by talent and work, and if they want to reach the eminence that he occupies, they must also have his talent and his ability. Honest-to-goodness, you cannot miss it; you cannot get away from it. When he gets a good customer and pleases him, he opens up his pipe dream and then and there spoils a perfectly good customer.

No. 4 has no backbone. He believes every-

thing that is told him. He lets the customer make the price and then supplies the quality of work the customer would like to get for the price. Once we caught him making postcards for 75 cents a dozen, and he was retouching and vignetting each negative. His customers compelled him to do it, he claimed. He only lost about a dollar on every such customer, and we suggested that he might get rid of his money quicker by throwing it in the fire. He was sore at the world. He was the victim of everyone. He was a perennial grouch and a perfect specimen of hopelessness. We have bucked him up often and he goes fine for a while, but before long he is back in the old habits and business is all shot to pieces again.

We could go on, but space forbids. suggest as a most effective tonic a careful study of some of the failures. Find out what makes them failures, and then do just the opposite. We feel that this is much easier than to try to follow all of the rules for success, and much more liable to take the first time. We find it quite a stimulating diversion and very good for the business health, even in times of prosperity. When we see to what straights a fellow can come to who never earns what he can and saves nothing of what he makes, we look into the case far enough to learn how he does it, then we get busy and try to be just as different as possible. It is good dope.—Trade News.

Exclusive Mountings: Their Advantages

Does your experience go back to the time when we used just two kinds of mounts? One had an enameled surface, with gold edges and the photographer's name in gold, and the other just plain edges with the photographer's name printed with ordinary ink.

It was a hard matter in those days to convince some people that one of those pictures was worth five dollars a dozen when the other could be had for three dollars. You can't blame the public either, for some of the three dollar pictures were better than some of the five dollar ones.

The great majority of photographers today are making but one grade of work and the size and style of the print and mount regulate the prices asked, which is as it should be.

The larger the picture and the greater the amount of material used, the higher the price, and the customer can readily see the difference.

Of course you want every portrait you make to be as good as you can make, for it will be an advertisement for your business. And while a ten dollar picture may, in your mind, be a cheap picture, to some people it will be high priced.

Your ten dollar picture, if it is as good as you can make it, may get you customers who have never paid more than five dollars for similar work, and if ten dollar pictures are profitable

you should want this business.

You don't make but one size of print, and when you make several sizes you don't charge a uniform price for all. When you have different prices for different sizes you don't use the same style of mount for all because your work would lack variety

This has been one of the big problems of the mount makers and we think it has finally been solved in such a way that you can carry less card mount stock, have less depreciation and get better prices for your work.

Suppose you make only four sizes of prints. If you carry four styles of mounts, each style in four sizes, you must earry a stock of sixteen different mounts. And if the mounts are of four grades of quality you would have sixteen different prices for your work.

On the other hand, if you have a special style of mount for each of the four sizes of work you make, you have only to carry a stock of four mounts, you have only four prices and you can change the style of any one of the four sizes of work at any time your stock of this mount is exhausted and you don't have old stock left on your hands.

Another advantage is that another photographer cannot sell a 5 x 7 print, on the same style of mount that you are using for a 6×8 , if the 6×8 mount is not made in a 5×7 size. It dis-

courages unfair competition.

If it is necessary to change the price of your work it is much easier if you also change the style of the mount. And if you change the styles of your mounts every year you can also make changes in the style of your work and have something new to offer your customers, all of which naturally increases the demand for photographs. -Photo Digest.

Posing the Head

MANY young photographers start on por-traiture heavily handicapped by a lack of training, not only in the principles of composition and lighting, but in the faculty of observation. If all men were like Apollo and all women like Venus, portrait work would be simple, and it would be difficult to make an ungraceful representation, no matter how carelessly the point of view were chosen. But, unfortunately perhaps, the average sitter is far away from the ideal in the matter of looks, even the most comely possessing some peculiarity which, if accentuated by bad posing, will go far to destroy their claims to beauty. The first thing, therefore, which the beginner has to learn is to use his or her eyes so that it is easy to see in what respects the model differs from the ideal, and then to arrange the pose so that these shortcomings are minimized.

The first thing to be learned is to recognize

a bad picture when you see one. If you cannot do this there is little hope of improvement. Unfortunately many excellent operative photographers never seem to be able to do this, the technical quality of the negative and print filling all their horizon. Such folk would do excellently with motor-cars or portmanteaux, and should keep to such subjects, leaving portraiture to those whose manipulations may be faulty, but who possess in some degree the power of artistic perception. Many successful portraitists are sadly lacking in technical knowledge, and could not hold a situation as assistant operator for a week, but they know a picture when they see it, and have worked along by slow degrees until they have attained their goal, while the technical expert has to be contented with such sitters whose perception of art is on a level with his own, perhaps occasionally "fluking" a success without knowing he has done so.

I do not propose to touch upon lighting or perspective, but to deal in as simple a manner as possible with the peculiarities of the face, and I would impress upon the novice that his study must be incessant, not necessarily laborious, but as a matter of habit; in every street, shop, train, or bus there are objects for study, and the question as to the best way of treating them should always be uppermost. I think that I have before mentioned the case of a clever retoucher I knew who told me that she always mentally retouched her vis à vis in the tube on her way to and from her work; that is the right spirit, and one that

leads to success.

We must never forget that every face has two sides, and that in ninety-nine cases out of a hundred these are widely different, that is to say, that the nose usually curves to one side or the other, that the eyes are seldom the same in size or position, and that the mouth is also more or less unsymmetrical. Besides these easily recognized features there are more subtle differences in almost every muscle, and particularly in the contour of the cheek. Of the general pose of the head little can be said except that it should be well balanced upon the neck, and that there should be no appearance of strain upon the muscles. In these times much more latitude in position is allowed than was formerly customary, and we see many pictures of ladies peeping in from the side of the picture in a position which would have horrified the old portrait painters. There is one mistake which must be guarded against, and that is of having the head turned in one direction while the eyes are looking in This is not always the photographer's another. This is not always the photographer's fault, for if not carefully watched the sitter will turn the eyes to see what is going on at the camera; therefore it should be watched for at the moment of exposure.

The face and shoulders should never both squarely face the camera. If a full-face portrait is desired the body should be slightly oblique to the lens, while in three-quarter-face poses the shoulders may be pearly but not quite square

the lens, while in three-quarter-face poses the shoulders may be nearly, but not quite, square. The eyes, I have already said, are seldom symmetrical, and as a rule it is advisable to turn the larger one to the camera. If one eye is higher than the other it should preferably be taken, but if these two characteristics are not on the same

side of the face the operator must make his choice between them. If the eyelids have a tendency to droop the sitter must be told to look up without altering the position of the head; while a tendency to stare must be remedied by looking down. Do not let the sitter know your object in directing the glance of the eyes, as this will probably lead to a noticeable effort to open or close the lids. In the case of sitters who habitually wear spectacles, these should be retained, as the apparent size of the eye is altered by them, and a portrait taken without them may not be approved. Many of the old photographers kept a stock of unglazed spectacle frames for the use of sitters to avoid reflections, but for the reason I have given this practice is not to be commended.

The nose requires special attention, as the whole character of the portrait may be influenced by the choice of sides. As a rule, the side which gives the straightest line should be presented If, however, this position is to the camera. incompatible with the best view of the other features, we must rely upon the retoucher to remedy the defect. At times it is inevitable to avoid calling in the aid of the pencil and knife, but, as a rule, the photographer should forget that retouchers exist. They will still have their work to do, but the more that can be achieved by the lens and the less by hand, the better for the likeness. In the case of long noses, the head should be slightly raised, or, better still, the camera lowered, as this will not affect the pose of the head as a whole, while short or retroussé noses need the head to be depressed or the camera raised. It is as well to remember that the camera has a rising front, which can often be used to advantage instead of giving an excessive tilt to get the figure properly centered upon the

The mouth is difficult to deal with, especially where it is habitually open. As a rule, any attempt to alter this results in failure, so that it is better to take a three-quarter view, and, if the nose will allow it, to depress the head a little. Fortunately, the open mouth and snub nose usually go together, so that this can generally be done. It is often complained that the mouth appears too large. This is really due to the fact that there is a shadow from the upper lip beyond the actual opening of the lips, which in the print appears to be a continuation of the opening. This shadow may be lightened by retouching. It is most noticeable when a little excess of top light has been used.

The cheeks must, of course, be considered in conjunction with the rest of the face, but care should be taken to get the most pleasing outline. If the cheeks are at all hollow and the cheek bones high, a nearly full-face position is best. As a general rule, it is not advisable to let the tip of the nose fall upon the outline of the cheek. It should either be well within the face or project beyond it.

Of profiles, little can be said except that, particularly in the case of ladies, it is not advisable to have the head exactly level, a slight turn up or down usually giving a more pleasing effect. Beware of making the ear appear too large. Ears are usually large enough in nature, and a

short focus lens intensifies the defect. forehead, while hardly a feature, calls for its share of attention. A high forehead may be foreshortened by tilting the head forward or by raising the camera, but this must not be done with a bald head. A low one is best taken from the level. The appearance of the neck is greatly influenced by the height of the camera. A low

position lengthens the neck, and a high one shortens it.

It will often be found that all the conditions for securing the best rendering of each feature cannot be obtained at the same time. judgment of the photographer must come into play, and he must decide which can best be sacrificed to the general effect.—B. J.



VIEWS AND Reviews



Twenty-first Annual Convention Photographers' Association of New England, at Springfield, Mass., September 8, 9, 10 and 11, 1919

Grand Prize, Solid Gold Medal

OPEN to all photographers in the U.S. and Three portraits not less than eight inches in length. \$2 must accompany entry (unless you are a member), which will pay for membership in the organization for one year.

A special prize offered by Abel's Photographic Magazine, for the two best portraits not less than 5 x 7 inches, made entirely by an employee working in a studio in New England. No entry

All other exhibits will be complimentary, and the Association will present a certificate to all exhibitors

Address all exhibits to, "Photographers' Association of New England, Auditorium, Springfield,

Send by prepaid express. Exhibits must be at Springfield on or before Friday, September 5, 1919.

The Association will not be responsible for pictures, but will use all possible care to protect all exhibits and will endeavor to return them in first-class condition. Pack in wooden boxes with screw covers and mark return address on the inside of cover.

Report of the Photographers' Association of America Convention, Cedar Point, Ohio, July 28 to August 2, 1919

THE convention of the Photographers' Association of America was held at Cedar Point, Ohio, during the week of July 28 to August 2. All conditions were favorable, the spirit of harmony and good-fellowship pervaded, and the Convention was considered quite as successful as in former years.

The new constitution and by-laws were adopted, with a few changes, and the following officers were unanimously elected for 1920: President, C. L. Lewis, Toledo, O.; first vicepresident, Howard D. Beach, Buffalo, N. Y.; second vice-president, G. L. Hostetler, Des Moines, Ia.; third vice-president, Mamie Gerhard, St. Louis, Mo.; treasurer, A. H. Diehl, Sewickley, The selection of the next place of meeting has been left to the executive board. It is impossible at this time to make the selection, due to many conditions, but several places are to be investigated and reported upon.

Captain Edwin H. Cooper's thrilling talk and moving pictures of war scenes, owing to restrictions on the use of the moving-picture machine in the convention buildings, were given on the beach, and everybody given an oppor-tunity to see and hear, which would have been impossible in the demonstration hall.

The total attendance was 1217, not including the photographers' wives or children. The total paid membership is 2436. Photographers from Transvaal, South Africa, and Mexico were in attendance, including fully fifty Canadians. Owing to the fact that a woman is now on the executive board, the Women's Federation was dishanded and a new organization formed.

was disbanded and a new organization formed, called the Women's Auxiliary of the P. A. of A., which is solely for the purpose of entertaining and looking after the women visitors at the international conventions. The hostess is to be the wife of the president of the P. A. of A., and for the first year Mrs. C. L. Lewis will have that honor; chairman, Mrs. Will H. Towles; secretarytreasurer, Mrs. Frank V. Chambers.

The name Photographers' Association of America remains the same, as it properly should.

Death of Henry A. Strong

HENRY A. STRONG, for more than a quarter of a century the president of the Eastman Kodak

Co. of New York, died at the family residence in Rochester, July 26, aged eighty-one years.

Mr. Strong had been a successful manufacturer of whips for many years, as senior partner of the firm of Strong & Woodbury, when he became interested in the photographic business in 1821. George Fastman was at that time in 1881. George Eastman was at that time

manufacturing dry plates, and it was Mr. Strong who had the vision and the nerve to back the then small enterprise with a few thousand dollars. The business was at first conducted as a copartnership under the firm name of Strong & Eastman, but its rapid growth demanded larger resources, and it was but a short time before it was incorporated and additional capital interested.

Mr. Strong sold out his interest in the whip business in 1895, when he took an active interest in the photographic business, which had then become the Eastman Kodak Company. In 1904 he retired from close association with its affairs, but remained on the board of directors as president. His business success was known, of course, to the world-but it was in Rochester, and particularly among those who were closely associated with him, that he was most appreciated. He had not merely those qualities of uprightness and integrity that gave him the respect of business men, but a largeness of heartand a happy way of showing it—that endeared him to those who worked with and for him.

He was not merely generous in a big way, a liberal giver to the charities of his home city, but he was thoughtful in the little things. He had the happy faculty of carrying with him an atmosphere of good cheer; a hard worker, until his later years, there was always time for a pleasant word of greeting, a winning smile, a merry quip or jest. And these he passed along, without favoritism, to the office boy as freely as to a fellow director. It was all spontaneous, the simple, unaffected evidence of his goodness of heart.

Photography owes much to Henry A. Strong, for he it was who first had faith to put money into the business that Mr. Eastman was developing. Rochester owes much to him, not alone for his backing what is now its greatest industry, but for his charities and for his good citizenship.

Collapsible Periscope for the Press Photographer

Even a press photographer is not always so fortunate as to be in the front line of the crowd when something is happening. Working on that assumption, an inventor has recently introduced a convenient form of collapsible periscope intended for use with the reflecting type of camera. His device is readily carried about in folded form, while when set up and ready for use it is attached to the front of the usual reflecting type of camera. In this manner it becomes possible for the press photographer and his camera to "see" over the heads of the crowd, and "cover" the event whatever it may be.

The Third International Photographic Salon, 1920

THE Third International Photographic Salon, under the auspices of the Camera Pictorialists of Los Angeles, will be held in the Gallery of Fine and Applied Arts, Museum of History, Science and Art, Exposition Park, Los Angeles, California, U.S.A., from January 3 to 31, 1920. The exhibition will be open from 10 A.M. to 4. P.M. (except Wednesday afternoons), and on Sundays open from 2 P.M. to 5 P.M.

The aim of the Salon is to exhibit only that class of work in pictorial photography in which there is distinct evidence of personal artistic feeling and execution.

All work submitted to the Jury of Selection will be carefully and impartially considered, but no picture will be eligible that has been previously

exhibited in Los Angeles.

All pictorialists are cordially invited to contribute. Address all correspondence and entrance fee to ERNEST WILLIAMS, Secretary, Room 31, Walker Auditorium, Los Angeles, California, U. S. A.

Death of Frank Emminger

Frank Emminger, aged fifty-three years, Southern Ohio representative of the Eastman Kodak Company, died at his home, 2568 Trevor Place, North Fairmount, Cincinnati, Ohio, July 14. He had been connected with the Kodak Company for nearly twenty years. He was a member of the United Commercial Travelers, Knights Templar and Shriners. His widow, one son, Franklyn Emminger, and a brother, D. B. Emminger, survive.

Expressions in Photography

An outsider writes: "If I were a photographer I would have a large mirror at one side of my camera. My subjects could then see pretty well how their pictures would turn out. In their endeavor to see how they look, they would lose their self-consciousness and their poses would be more natural. As a result, my pictures would be truer to the reality, and my studio would become more popular.

"I might also have a talking machine in my studio. This I would place out of sight. My collection of records would be varied so as to appeal

to every one.
"Then if the mirror failed to take my customer's mind off his posing, I would start the talking machine. I am sure the music-I would select a piece I thought would most appeal to him—would attract his attention and perhaps take the strained expression from his face." Not such a bad idea at all.—Northern Photo News.

Sure Photography

ANOTHER sign that the war is over is to be found in the fact that Burroughs, Wellcome & Co. have recommenced the publication of their attractive and instructive booklets on photography. Sure Photography is a worthy member of the series. It is published for the use of present or prospective users of "Tabloid" Photographic Chemicals, but it contains so much valuable and practical information that no amateur ought to neglect to apply for a copy which is to be had for the asking.

As usual, the booklet is based on those sound

scientific methods of which Burroughs, Wellcome & Co. have been pioneers, and is written in such a way as to be useful to the very beginner and yet

interesting to the expert.

Its main object is to enable the photographer to make sure of his exposure, of his negative and of his print. Sound advice is supported by



accurate information, useful tables and pictorial demonstrations of the text. The aim has been to give the essential instructions for securing successful results in a booklet of thirty-two pages, and it must be admitted that this aim has been achieved in a very practical way. The booklet may be obtained gratis and post-free by application to Burroughs, Wellcome & Co., 18-20 East Forty-first Street, New York City.

"Daddy" Lively's Special Two Weeks Post Graduate Review for Professional Photographers, September 1 to 13, 1919

A COURSE of practical work and demonstrations of all the best and newest ideas to help the studio improve and increase its earnings.

Handling the light is exhaustively illustrated, teaching all the recognized effects of light and shade, including many methods of securing them, using figures and groups with day as well as artificial lights.

Each member of the class will practically do what is demonstrated, thereby insuring a retention of the knowledge that is being imparted.

Special features of this course will be: "Daddy" Lively's method of handling light and subjects; working-in backgrounds on back of negatives; copying and enlarging, and how to finish them up to improve their character by the help of air-brush; general air-brush work; coloring photographs in water colors with air-brush; color photography; autochroms; local development of negatives and other local treatment for special effects.

The course is full of real helps.
Southern School of Photography,
McMinnville, Tennessee.

"The Elements of Photography"

A REVISED edition (in the "Practical Photography Series") of this popular handbook. Being an elementary manual for the beginner, giving a concise and thorough description of the fundamentals of photography with film and plate cameras. The amateur photographer is sure to find in its pages much useful information. Paper, per copy, 35 cents; cloth, 75 cents. This office.

Mr. Eastman Founds Music School to Aid Movies

Announcement of the gift by George Eastman, head of the Eastman Kodak Company, of \$3,500,000 for the establishment of a school of music in connection with the University of Rochester, which will aim to aid the development of an appreciation of the highest type of motion pictures as an ally of the highest type of music, was made at a dinner given in the Genesee Valley Club by Mr. Eastman for members of the National Association of the Motion Picture Industry, who held their third annual convention here.

The institution, to be known as the Eastman School of Music, has been endowed by Mr. Eastman for \$2,319,000. He has purchased a site near the center of the city at a cost of \$381,000 and provided \$1,000,000 for construction.

The building will comprise the school of music and an auditorium capable of seating 3000 where motion pictures of the highest type will be shown accompanied by the music of a symphony orchestra, for the maintenance of which Mr. Eastman has provided. Proceeds from the exhibitions will go toward the maintenance of the institution.

Toning P. O. P. Proofs Without Gold

This month we offer our professional friends a suggestion as regards the toning and fixing of P. O. P. proofs. It is a debatable point as to whether they should be sent out fixed or not, but we are inclined to recommend that they be fixed. So far as we can see, the only reason for sending out unfixed proofs is to defeat the "something for nothing" customer. It is a fact that, in spite of the customary caution sent with unfixed proofs, the sitter invariably exposes them freely to daylight until the images appear flat and foggy. This may militate against a good order; indeed, it often results in dissatisfaction and a request for a resitting.

We suggest that the proofs be printed rather deeply and immersed in a combined toning and fixing bath that will give a pleasing warm tone with full gradation but imperfect fixation. A P. O. P. proof treated in the bath given here will retain its color and brightness for several months, and, as no gold is used, the process is inexpensive.

Lead Toning and Fixing Bath

Acetate	of lead				1/2 oz.
Hypo . Water					4 oz.
Water					20 oz.

The P. O. P. proofs are printed fairly deeply and immersed direct in the above bath for from three to five minutes. The color produced is a rich warm brown, free from yellowness, with pure high-lights. A short wash in water completes the process. The used bath can be saved and used over again much in the same way as the hypo-alum bath for toning bromides, and replenished occasionally with new solution. A new bath has a greater reducing action than an old one, and the tones are warmer.

If self-toning paper is used for proofs, this bath gives with the paper a very fine brown tone, quite free from double tones or yellow-

We do not, of course, recommend this toning bath for ordinary work, as the prints gradually undergo a change of color, and cannot be considered as permanent.—Rajar "Trade Notes."



The WORKROOM

ONTAINING THE LATEST PROCESSES, FORMULAE AND APPLIANCES NEEDFUL IN THE ART OF PHOTOGRAPHY FOR THE OPERATOR & WORKER

Hypo
The Pyro-metol Soda Developer
Personal Practice in Lantern-slide Making
Dry Mounting without Press or Tissue
The Iron-silver Process
Finishing Bromide Prints
Strip Tests in Carbon Printing
Getting Definition
The Reproduction of Negatives
A Filing Cabinet for Films
A Plea for the Ozobrome Process
The Dark-room and its Fittings
Spots and Stains
Patent News
Photographic Materials and Processes



WORKROM

By the Head Operator



Нуро

ONE of the most important of all photographic

chemicals is ordinary hypo.

And what is hypo? The chemist knows it as the thiosulphate of sodium. In the drug shop it is usually known as hyposulphite of soda. common parlance this name is shortened to the familiar "hypo." Hyposulphite is really an incorrect name. The true sodium hyposulphite is a rather rare chemical, scarcely met with even in the chemist's laboratory. It has no particular use and is expensive, so there is very little trouble in confusion of names. A chemist who desires to procure the real hyposulphite usually knows how and where to buy it. In the shops the ordinary "hypo" or thiosulphate of soda is always furnished when hyposulphite is specified.

Hypo is a compound of three chemical elements, sodium, sulphur and oxygen. So also is sodium sulphite; the only difference is in the proportion. The hypo contains one part more of sulphur than sulphite. This is readily seen from

the chemical formulæ:

Sodium sulphite, Na₂SO₃. Sodium thiosulphate, Na₂S₂O₃.

One of the earlier methods of preparing "hypo" makes the relation clearer. The process was simply that of boiling the sulphite with the correct proportion of flowers of sulphur. sulphite solution under these circumstances will take up the necessary sulphur and be converted into a solution of sodium thiosulphate from which the "hypo" may be crystallized out. This method is no longer useful in practice, since "hypo" is produced as a by-product in chemical factories. It would have to be thrown away were

it not for its photographic uses.

But Na₂S₂O₃ does not represent the entire composition of ordinary "hypo." The complete formula is Na₂S₂O₃ + 5H₂O. The 5H₂O represents the five molecules of water of crystallization that are contained in all crystal hypo. By crystal hypo, we mean all hypo that is made in the solid form by crystallizing out of a water solution. It includes not only the large crystals and the pea crystals, but also the granular and powdered forms. Granular hypo is simply crystal hypo in finer crystals. The crystals are made fine by agitating the liquid while they are separating. Powdered hypo is made by grinding any one of the crystal forms. There is also anhydrous hypo just as we have anhydrous sulphite of soda practically free from water of crystallization. Anhydrous hypo would be represented by the simple formula Na₂S₂O₃. Anhydrous sulphite is of double the strength of crystal sulphite but the difference is not so great in the case of hypo. About six parts of anhydrous hypo are required to be equivalent to ten parts of crystal

The anhydrous salt is very different in physical form and properties from the crystals. When making a solution with ordinary hypo we always notice a marked lowering of temperature of the liquid, due to the dissolving of the crystals. When anhydrous hypo dissolves, however, instead of a lowering there is a raising of temperature. A little anhydrous hypo mixed quickly with water to a paste in the fingers, becomes quite warm. If this experiment be tried another peculiarity is also noticed, namely, the anhydrous hypo takes up quite a considerable amount of water and "sets" to a hard solid, just as "plaster of Paris" does. This property makes it somewhat difficult to prepare a solution from the anhydrous When poured into water the particles immediately cement themselves together very firmly into large masses which are slow to dissolve. It is far easier to make solutions with the crystal forms of "hypo," which have not the tendency to "cake." Of course, this caking tendency may be obviated by stirring the solution while pouring in the powder in a fine stream, but as the anhydrous form of hypo is more expensive and not usually so pure as ordinary hypocrystals, it is hardly at all used in America, though employed to some extent in Europe in the manufacture of fixing cartridges of exceptionally small weight and bulk.

Some few photographers insist on using chemically pure hypo in their work, but the precaution is quite unnecessary. Ordinary hypo is really a very pure article and, even were it not, slight impurities would do no harm. You may add considerable amounts of sulphite, sulphate or chloride of sodium to any hypo bath without appreciably affecting its properties. When preparing developing solution one of the reasons why pure chemicals are necessary is to make certain that the right strength of each chemical enters into the solution. With hypo solution, however, the strength is comparatively unimpor-

tant, so this reason has no weight.

The plain hypo solution of 20 or 25 per cent. strength is quite as good as anything, as far as the simple operation of fixing is concerned. But when a plate is brought over to the hypo bath it is always more or less soaked with developer and it is to neutralize this developer and to prevent discoloration of the fixing bath and staining of the negative, that an acid fixing bath is employed. Alum is frequently also added to the acid-fixing bath to harden the gelatin film of the negative, and prevent frilling and blistering. The bath is then a combined "three in one" bath for fixing, hardening and neutralizing the developer at the same time. These acid-fixing baths are in practice much more economical than plain hypo baths, simply on account of the fact that the bath remains clear and may be used

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for a much longer time before it has to be replenished. A bath is never thrown away because its fixing power is exhausted. A pound of hypo would be sufficient in chemical strength to fix several cases of plates, but it never is used for more than a few dozen in practice, on account of becoming dirty and discolored.

The Pyro-metol Soda Developer

ALL are, I believe, agreed that a standard developer will develop any standard make of plate, and it is not uncommon for a worker to use, say, a Barnet formula for an Imperial plate, and to ring the changes in otherways. Some formulas are perhaps more popular than others, and if I were asked to name two of the most widely used I should write down the Imperial pyro-metol and the Ilford pyro-soda. The latter first appeared in the autumn (October, I believe) of 1892, when it was recommended to us as being better than the pyro-ammonia developer we were then using. It suited all good plates, and soon became a favorite with most of us. Many, like myself, have used it frequently for a quarter of a century, but I wonder how many of its admirers have noticed its partial disappearance from the firm's instruction sheets? I use the word "partial" for the reason that, although the original pyro-soda foundation remains, the formula appears in a different guise somewhat, the more recent one permitting of the addition, if necessary, of metol or potassium bromide, as may be required for the correction of underexposures and overexposures respectively. The new form has much to recommend it, hence my calling special attention to it. I need not here dilate upon its excellences, as the instructions for use fully explain the work done by the solutions. are four working solutions and one stock solution, and although this may appear to be a lot to look after, and more than may be necessary it will be clear to practical workers, that all four solutions may not always be necessary, their use depending upon the exposure. The formula now advocated is:

Stock pyro . Water Potassium meta Pyro	bist	ılph	ite		10 per cent. 10 ounces 100 grains 1 ounce
,	No		•	•	
Stock pyro solut Water to .				:	2 ounces 20 ounces
	No	. 2			
Soda carbonate,					2 ounces
Soda sulphite, c					2 ounces
Potassium brom	ude	sol	utic	n	2 drams
(No. 4) . Water to	•	•	•	•	20 ounces
water to			•	•	20 Gunces
Metol, or its equal Soda sulphite, o	uiva ryst	als			1 ounce
Water to	•	•	•	٠	10 ounces
.		. 4			
Potassium brom	nde				1 ounce

10 ounces

Water

For normal exposures take equal quantities of Nos. 1 and 2. This, it will be noted, will be practically the same as the old and well-tried pyro-soda formula, no metol being advocated for normal exposures. In the original formula we were given the choice of metabisulphite or nitric acid as the preservative to be used in the stock pyro solution, and the use of from 1 to 2 ounces of the latter in a pint of working solution; now, however, the instructions are more definite.

For underexposures add 1 dram of No. 3 (metol solution) to each ounce of mixed (pyrosoda) developer. Thus it will be seen that metol is only called for when exposures are under the

normal.

For overexposures add 1 dram of No. 4 (bromide solution) to each ounce of mixed developer. This, it will be observed, is extra bromide, and, in cases of known overexposure, should be added before the developer is applied to the plate.—
L. Tennant Woods, in British Journal of Photography.

Personal Practice in Lantern-slide Making¹

MR. DUDLEY JOHNSTON enforced the account of his methods by the exhibition of a very large number of beautiful lantern views. He dealt in the first place with the production of slides of warm tone, and in the second with the process of blue and blue-gray tone slides, which are the characteristic feature of his own lecture sets. This latter process, he said, was not by any means easy, but there was no secret about it. It was all set out in Wratten and Wainwright's handbook (first edition) on "Lantern Slides." He believed that it had been discarded in later editions on the ground of difficulty and uncertainty, but his own experience was that it was a more certain and elastic process than the method of physical development which had been substituted. It was undeniably a somewhat difficult process, and required a long experience to work it with reasonable certainty.

He proposed to discuss the subject from the point of view of the production of a set of lanternslides for lecture purposes. His idea, in the first place, was to consider the set as a whole, and decide upon a general color scheme most suited to the subject. It was not necessary that the color scheme be rigidly adhered to throughout, for that would mean a fatal monotony. But a general color scheme, with judicious variations, formed a restful combination that was pleasing, whereas a constant succession of unrelated contrasts produced distraction. A strong or even a violent color contrast might be used with telling effect for the climax, but any departures from the general color selected should only be for a care-fully considered contrast, and then only because the color chosen presented the picture at least as well as the normal color would. On the whole, a brown that was not too heavy nor yet too yellow was the most pleasant and generally useful color.

After showing by means of the lantern how

¹ Report of Lecture by Mr. Dudley Johnston before the Royal Photographic Society.



occasionally abnormal effects, such as pyro stain or double toning, could be used to serve a pictorial purpose, Mr. Johnston went on to speak of the selection of the subject. For prints a certain amount of diffusion might be desirable, especially in the unessential details of the picture, but for lantern-slide work the negatives are required to be in sharp focus throughout. Development was carried through with due regard to the illuminant that was to be used to make the slides. The negatives were dried face downward, like the slides also, to avoid catching dust or hairs, and very carefully spotted or retouched with the aid of a magnifying glass, in order to avoid as far as possible the necessity of working on the lantern slide itself.

For making the slides he used a reducing camera made by Lizars, mounted on a baseboard about 5 feet long, with a revolving negative carrier at one end. The camera had a rising and falling front and a swing back, very useful appliances for adjusting the image and for correcting the perspective of vertical lines, etc., if necessary. The lens was a 6-inch Cooke anastigmat, working at f/6.5. Usually he focussed at full aperture to get the maximum illumination of the image, and then stopped down to f/16 to make sure of sharpness. He used Paget slow plates almost entirely, rapid plates only occasionally for black tones. It was best to stick to one make of plate. He found no advantage in "backed" plates. His illuminant was a three-tube mercury vapor lamp, the light being reflected from a white card placed behind the negative. With this light and average negatives the exposures were:

Black tones .		7 to 10 sec.
Brown tones .		30 to 100 sec.
Blue-gray tones		$1\frac{1}{2}$ to 2 min.
Violet tones .		10 to 15 min.

The developer must be adjusted to the exposure. If warmer tones were desired, not only must the exposure be increased, but a corresponding alteration must be made in the constitution of the developer. Neglect of this led to muddy tones.

In development he formerly used adurol for warm tones; this, he believed, was an improved form of hydroquinone, and free from some of the latter's drawbacks. Whether adurol would be obtainable after the war was a problem, but if not, equally good results were forthcoming with a metol-hydroquinone developer, such as is given with every plate-maker's instructions. An important factor in obtaining satisfactory tones was the temperature. He worked, as a rule, at 70 degrees, and sometimes as high as 75 degrees, but great care was then required as the gelatin became very tender. His plan for keeping the developer at a constant temperature in cold weather was to keep a large basin of warm water on the bench and maintain it at 70 to 75 degrees by adding hot water as required, and in this he put all dishes and measures when not in actual The fixing solution and washing water should be of similar temperature to the developer.

His aim was so to adjust exposure, developer, and temperature that he got the first faint but

distinct image on the plate in about sixty seconds after pouring on the developer. In that case development would be complete in about five minutes. Density was judged by looking through the slide against the lamp. (He used a yellow safelight, Wratten's O. O., with an extra sheet of yellow paper, as his lamp was 32 c.p.). It was curious to note that the developer improved with use. He did not throw it away at the end of his evening's work, but left it in the measure, and on going to work again in a day or two he threw half the old developer away and made up the bulk with fresh. Thus used, it gave better colors, was more regular in its action, and density was more easily judged.

As to blue-gray and blue tones, all of these in his slides were obtained by development pure and simple, and not by any after-toning. The blue tones obtainable by gold toning were well known. but they had not the variety and subtlety of the developed tones ranging from black through blue and violet to red. After showing by examples how this process lent itself not only to moonlight and strong effects, but also to effects of quite notable delicacy, he proceeded to give an outline of the method. The formula of the developer would be found in the first edition of Wratten and Wainwright's booklet on "Lantern Slides," and he expected it was worked out by Dr. Kenneth Mees. According to the exposure and the proportions of the developer, this would give colors ranging from black through blue to purple and red. Even for the black tones the exposure required was about four times that which was normal for an ordinary developer.

A Metol Water Anhydrous sodium sul Hydroquinone		t e	 44 gr. 20 oz. ½ oz. 22 gr.
В			
Ammonium carbonate Ammonium bromide Water	:	:	1 oz. 1 oz. 10 oz.
Thiocarbamide Ammonium bromide Water			33 gr. 11 gr. 10 oz.

TABLE OF MIXTURES AND EXPOSURES

				I	evelope:	r.
				A	B.	_C
Tone required.		Expo	sure.	dr.	dr.	dr.
Blue-black	4	times	normal	6	$1\frac{1}{2}$	1/2
Blue	8	"	"	5 1	2	$\frac{\tilde{1}}{2}$
Violet	16	44	**	5	$2\frac{1}{2}$	1/2
Red	32	44	"	$4\frac{1}{2}$	3	1 2

In working this process, he aimed, as in the case of the brown tones, at an exposure which would ensure the first appearance of the image in sixty seconds, using the developer at 70 degrees. Development should then be complete in five minutes. The great difficulty was to gauge correct density, and the only reliable method was to watch the slide by reflected light in the develop-

ing dish and follow carefully the various phases. The first appearance of the image was yellowish. darkening to red, and then becoming bluish-As development progressed the whole slide darkened over in a manner that might suggest gross overexposure or fogging, but this was to be disregarded. Presently the darkest portions began to take a lighter tinge, almost as if reversal was beginning. When they showed a well-pro-nounced buff color development had gone far

As to color, this was mainly determined by the exposure and the composition of the developer, but the negative also seemed to have some subtle influence. Cases arose in which a negative would yield a slide of a particular color, but no variations of exposure and development would induce it to give a really satisfactory slide of any other color. The color of the wet slide was usually quite different from what it would be when it was dry. Generally speaking, a slide which was a good blue when dry was pink when wet, but not invariably. This developer, again, was not at its best when fresh, and he was accustomed to put aside what remained over at the end of an evening's work, and when he next wanted to use it, poured half the developer away and added a little fresh, mixed in the same proportions as before

Fixing took place in acid hypo, then the slide was well washed, then hardened for two minutes in 5 per cent. formalin solution, washed again for five minutes, and finally put to dry on a rack, face downward, so as to avoid dust, etc. When dry he tested the slide in the lantern and decided whether any reduction or intensification was advisable. In his experience there were few slides that could not be improved by one or other of these processes, sometimes by both.

For reduction the slide should first be soaked in water for ten minutes or more. Hypo-ferricyanide reducer was the more generally useful form. He kept an old egg-cup into which he poured 1 dram of saturated solution of plain hypo added two or three drops of 10 per cent. solution of potassium ferricyanide, and filled up with water. The finger tip was by far the most satisfactory means of applying the reducer, but a small sable brush was useful at times. It was wonderful how much could be done by these means with practice.

The intensification of slides was a very simple and certain process with the acid silver intensifier:

	Α				
Metol					88 gr.
Citric acid					176 gr.
Glacial acetic acid					1 oz.
Water				•	20 oz.
•	_				
	В				
Silver nitrate .					1 oz.
Distilled water .					10 oz.
For use: 1 oz. A, 1	dra	am	В.		

This formula was well known, and was mentioned in many books on lantern slides, but he had not anywhere seen a reference to one great and valuable property that it possessed, namely, that of intensifying the slide without altering the

color. Whether the slide were brown, black, or blue, it remained the same color after being treated. It was necessary to apply the intensifier to the dry slide, and the action should not be continued for more than 70 or 80 seconds. If the requisite density had not been obtained in that time the slide should be washed for fifteen minutes and dried, and the intensification repeated. If the action was continued for more than one and a half minutes, or if the slide was first wetted, this intensifier tended to give a bluish tint. It was, as a matter of fact, a physical developer, and could be used to turn a very weak

underdeveloped slide into a good blue one.

It now remained to put the finishing touches before masking and binding the finished slide. He again put the slide into the lantern and examined the projected image carefully for any defects. If there were scratches or abrasion marks, or if pieces of opaque matter or splinters of glass were embedded in the film, there was practically nothing that could be done, and if they were in the sky portion or any other place where they were noticeable it only remained to make a fresh slide. It was otherwise with clear spots, whether due to air bubbles in development or flaws in the negative, and in examining his own slides on the screen he was careful to locate any

such marks.

His method of eliminating these was to place the slide on a retouching desk illuminated by a strong light reflected from a sheet of white paper, and to touch out the spots with a pencil having a very fine needle-like point. The pencils he used were 6 H. or 9 H., and the points were trimmed long and kept sharp on a pad of fine sandpaper such as Winsor and Newton made for the use of artists. A needle mounted in a paintbrush handle made an effective retouching tool, as a prick in the gelatin was sufficiently opaque. It also had the advantage of not constantly requiring to be sharpened. He went over the spot with a gentle pricking action as evenly as possible, guiding the operation with the aid of a powerful reading lens. Viewed by transmitted light the effort might appear to show little result, but when tested in the lantern—which, after all, was the conclusive test-it would probably be found much more effective than was thought.

Before binding the slide, he thoroughly dried both the paper mask and the slide before a gas fire, and took great care to exclude all hairs and particles of dust (which showed a most wonderful affection for the warm film) when attaching the

cover glass.

Mr. Dudley Johnston concluded by passing a number of slides through the lantern. Most of the slides were Italian views, and they illustrated the capacity of the thiocarbamide process to give, on the one hand, full rich black tones of really velvety quality, and, on the other, red or reddish purple slides, with every effect in between, including delicate grays and blues

At the close of his lecture Mr. Dudley Johnston was asked what was the best surface to lay the plate on in order to dry, and said he used wire racks above the mantelpiece, and simply supported the plate face downward, against the wall so that there was plenty of air underneath, and yet any dust settling would go on the back of the plate and not on the face of it. In reply to the chairman, who asked whether he fixed face downward or upward in the dish, he replied that he fixed face upward.

Dry Mounting without Press or Tissue

No doubt in many respects dry mounting by means of hot press and tissue is ideal, but it has the disadvantage of being rather expensive; and that to a great number of photographers is an insurmountable one. Not only is the initial outlay somewhat heavy, but there is a constant expense for heating and tissue. The method of mounting which it is proposed to describe is cheap, convenient, requires no more expensive apparatus than an ordinary domestic flat-iron, and there is no bending or cockling of the mount, which last statement can be made of very few mountants in which water, in even small quanti-

ties, forms an ingredient.

The principle of the process is this: that when shellac is heated to about the temperature of boiling water it melts, and becomes very "tacky" at the same time. If, then, we give the back of the print a coating of shellac, and when in contact with a mount heat it to a temperature of 100° C., the print and the mount adhere, and a mounted photograph is the result. Moreover, since there is no evaporation of water there is no contraction, consequently no cockling, and the print and mount lie perfectly flat. This sounds, and indeed is, very simple, but, like most simple things, there is a right and a wrong way to do it; and the writer wishes in this article to help fellow photographers avoid some few pitfalls out of which he has climbed during his working of the process.

The first thing is the making of the solution of shellac. Obtain \(\frac{1}{2} \) pound of common brown shellac from the drysalter, place in a bottle, and pour in methylated spirit until the shellac is about half to two-thirds covered; that is, there should be 8 ounces or 9 ounces by volume of solution when the shellac is completely dissolved and thoroughly incorporated with the spirit, and the solution should run easily, but should be much more viscous than water. The shellac takes some twenty-four hours to dissolve, and the best way to hasten the process is to place the bottle in some warm position, such as the kitchen mantelshelf, giving it a thorough shaking from time to time. For several reasons, a widemouthed bottle is most convenient in use.

The next step is the application of the shellac solution. This should be done before the print is trimmed to the required size. It does not then matter if a little of the shellac creeps over the edge of the print on to the image side. The solution is applied with a soft hair brush about inch wide, and a fairly thin, even coat is given to the back of the print. It is well not to err on the "over" side, otherwise when the heat is applied to the print the shellac will begin to ooze round the edge, and in the case of self-toning papers if there be too much methylated spirit present it will begin to dissolve the film itself. This, by the way, is one reason why the shellac solution should not be too dilute; another is that with insufficient shellac present proper and

permanent adhesion between print and support does not take place. If by some inadvertence a little of the shellac has found its way on to the surface of the print, it can easily be removed in the case of bromide and gaslight papers or P. O. P. by rubbing gently with a tuft of cotton-wool moistened with methylated spirit, but this is impossible with most self-toning papers, as already shown, and it should be attempted very carefully with carbon and platinum papers.

Having applied the shellac, the print should

Having applied the shellac, the print should be left to dry for half an hour, and it may then be trimmed and mounted at once, or left for a few days or even several weeks, for the mounting. In this respect the process is very convenient, for a number of prints can be coated with shellac in a few odd minutes, and then left for an opportunity of greater leisure for the final operations. It should be noted, however, that the prints appear to adhere to the mount with the maximum of ease when the coating and mounting are done

on the same day.

Now to the actual mounting, and in this part of the process there are more precautions to be taken than in any other, but after the first attempt or two they become a matter of routine. The "press," as has been already intimated, consists of an ordinary flat-iron, but if it be equipped with one of those nickel-plated shields, now sold by ironmongers at about 9½ d., it will be found much cleaner and more convenient to use. The iron is heated in the usual housewife's way, on the gas-ring or at the fire, but not to so great a temperature as is necessary for domestic use. If too hot, there is a tendency to burn the shellac instead of merely melting it, and the print curls so violently that it is difficult to make it lie flat on the mount. If the iron be too cold, then the shellac does not melt properly; it is difficult to get the print and mount to adhere at all, and often enough, when cold, the print breaks away from the support, either in patches or altogether. The right temperature is reached when, if the iron (without shield) be placed 10 inches to a foot from the cheek, the heat radiating from it is just perceptible to the face. About twelve prints (quarter-plate) can then be mounted because the iron becomes too cool. For a large number of prints, two irons worked in relays are a convenience.

For ironing down the prints, a firm flat support, such as a deal kitchen table, is necessary, and it is well to place on the top three or four thicknesses of paper which have been thoroughly warmed before the fire to drive out absorbed moisture. Between the print and the iron there should be a sheet of *plain*, thin paper, otherwise the iron will leave shiny marks on the print. This sheet of paper must also be thoroughly dried previously by running the iron several times over it, to obviate any danger of its sticking to the print. Now, having made all preparations (which, although apparently numerous, in reality take but a few moments), the mount is put on the table, the print placed in position and held there while the sheet of thin paper is put on, and the hot iron passed steadily all over it, in a large print starting from the center and working to the edges. After the iron has covered the whole surface, raise the paper to see whether the print

has everywhere adhered to its support, and if some corner or edge is still unattached, apply the iron with a moderate pressure for a few seconds particularly to that place. Sometimes if the iron is a little too hot it will cause the print to curl up. A gentle pressure of the fingers at the point will make it stick down properly as the shellac becomes cooler and more "tacky."

In using this method for passe-partout work (and for this it is particularly suitable), it is best to attach only the top edge of the "auxiliary" mounts and print, since the pressure of the glass ensures their lying flat when bound up; but care should be taken to dry the mounts well before ironing down, otherwise a little buckling will take place, owing to the rapid evaporation of absorbed moisture contained in the paper.

Perhaps it is hardly necessary to add that the

Perhaps it is hardly necessary to add that the print may be removed from its mount at any time should this be required, by passing a hot iron over the face of the print and then gently pulling it away from the mount, as the warmth

makes the shellac melt.-Photography.

The Iron-Silver Process

Of the various printing methods which have been described during the past few weeks under this heading, for the most attractive and at the same time the best for giving a good range of half tones with strong blacks (or other colors) in the shadows is the iron-silver process. This process, which is generally known as Kallitype, was invented by Dr. W. W. Nicol in 1890, and it is an extraordinary thing that it is not more generally known and used. The sensitive paper is simple enough to prepare, and prints produced by the process rival those produced in platinum. The introduction of so many perfect commercially prepared printing papers of the bromide and gaslight type, which needed no preparation and gave technically perfect results with a minimum of time and trouble, is probably the cause why the modern worker ceased to take much interest in printing processes which necessitated sensitizing and preparation of every sheet of paper beforehand.

The present war-time conditions have tended

The present war-time conditions have tended to make many workers abandon photography altogether, owing to high prices of materials, and it is more particularly for these that the present notes are intended, as they may achieve the object of keeping interest alive in picture making until better times arrive. At the same time it must be clearly understood that these various home-made processes are not put forward as competing in any way with the perfect commercial articles put on the market by the leading manufacturers, and which should still be used

whenever possible.

The process such as the one described hereafter

opens up endless fields for experiment.

For the preparation of a kallitype print any rough or smooth surfaced drawing paper of good quality may be used. Pure paper will give the best results. It is first sized by brushing or sponging over with—

Arrowro	ot				•		•	180 gr.
Water		•	•	•	•	•	•	20 oz.

The arrowroot should be made into a thin cream with a little of the water, and having heated the remainder to boiling, pour it on, stirring rapidly all the time. A paste is thus formed which should be boiled for a further eight or ten minutes, and then set aside to cool. Fresh paste should be made for each batch of sizing, as it will not keep. A smaller quantity than the above can, of course, be made. It is applied thoroughly with brush or sponge to the surface of the paper, which should be pinned on a flat drawing board. If the paper is rough, see that the size is well worked into the surface.

When dry, sensitize by applying the following

sensitizer with a sponge:

Ferric oxalate				75 gr.
Oxalic acid .			•	5 gr.
Silver nitrate	•	•	•	30 gr.
Distilled water				1 oz

Dissolve the ferric oxalate with the oxalic acid in the water heated to about 110° F.; then filter,

and add the silver nitrate.

An alternative formula published some time ago by a writer in the *Photo Miniature* is as follows. (This we find gives even a greater range of gradation than the preceding formula, but is somewhat more difficult to make up.) Care should be taken that the purest chemicals are used.

Ferrid oxalate Distilled water Gum arabic (picked) .		1 oz. 5 oz. 48 gr.
В		
Ferric potassium oxalate Distilled water	:	½ oz. 8 oz.
C Oxalic acid Distilled water Liquid ammonia .880 .	:	½ oz. 4 oz. 100 min.
D		
Bichromate of potassium Distilled water		120 gr. 4 oz.

Solutions A and B should be kept in deep amber bottles. To make up the sensitizer, take of A 1 oz., B $\frac{1}{2}$ oz., C 30 minims, D 4 drops. To each $\frac{1}{4}$ oz. add 6 gr. of nitrate of silver. When the silver is quite dissolved and the solution is clear, it is ready for applying to the paper.

Dry the pieces of sensitized paper in the dark, and, when dry, printing may be proceeded with at once, although the paper will keep for some time in a dry place, if packed carefully. To print, expose under negative to daylight as with platinotype, and the exposed paper presents somewhat the same appearance—a faint brown image on a yellow ground. Printing should be carried on until the detail is just faintly visible in the densest parts.

Development is carried out by immersing the print in one of the following baths, and it will be noticed that on the salt used the tone of the

finished print will depend:

No. 1
For Pure Black Tones
Borax $\frac{3}{4}$ oz.
Borax 1 oz.
Rochelle salt (sodium potas-
sium tartrate) $\frac{3}{2}$ oz.
sium tartrate) ½ oz. Distilled water 10 oz.
1 per cent. solution potas-
1 per cent. solution potassium bichromate 7 to 9 dm.
No. 2
For Sepia Tones
Rochelle salt ½ oz. 1 per cent. solution potas-
i per cent. solution potas-
sium bichromate 4 to 5 dm. Distilled water 10 oz.
Distilled water 10 oz.
<i>No.</i> 3
For Warm Maroon Tones
Sodium tungetate 1 oz
Sodium tungstate 1 oz. Distilled water 10 oz.
Distinct water 10 02.
No. 4
P
Borax
Rochelle salt 450 gr.
1 per cent. solution potas-
sium bichromate 10 dm.
Distilled water 10 oz.
sium bichromate 10 dm. Distilled water 10 oz. The print is developed in a dish in exactly
the same manner as a platinotype, except that
instead of taking the print out as soon as the image attains its full vigor, it is left in the
image attains its full vigor, it is left in the
developer for about ten or fifteen minutes, in order to dissolve all the iron salts, the presence
order to dissolve all the iron salts, the presence
of which is a most prolific cause of failure. In
developing the large sizes it will be as well to
immerse the print face downward, and then at once to turn it over, breaking by a gentle touch of the finger-tip any air bubbles. The prolonged
of the force tip any air hubbles. The prelenged
immersion in the developer will not produce
immersion in the developer will not produce over-development, providing the exposure has
heen correctly timed. At the end of the men-
been correctly timed. At the end of the men- tioned time the prints are fixed in the following
bath:
Нуро 1 оz.
Water to 20 oz.

Water to . 20 oz. 0.880 ammonia 120 min.

The prints remain in the bath for about ten minutes, and are then washed in running water for half an hour.—Photography.

Finishing Bromide Prints

At the present time the already great popularity of bromide paper as a printing medium appears to be steadily increasing, and one is quite safe in saying that practically all the brands now on the market made by the leading manufacturers are both reliable and capable of giving results of very high quality in the hands of all classes of photographers. The beginner can depend upon obtaining a satisfactory print with a minimum of trouble, while the advanced worker and the professional can also secure the best results desirable with exactly the same materials.

It is, however, principally in the final stages of the production of the finished print that the advanced amateur worker and the professional are able to add an extra touch of quality to their pictures that the beginner does not generally achieve. It is a curious fact, and one to which attention may be drawn here, that there is a remarkable unanimity among the manufacturers of bromide papers in one particular. It is in concluding the directions issued with their materials with the injunction as to washing the print after fixing. There the matter ends; the finish of the print which, may make or mar it, is left to the individual worker, so far as his knowledge permits.

Nothing, for instance, is said regarding the necessity for removing the deposit on the surface of the print produced by the matter held in suspension in the tap water in certain districts. The volume of this is frequently very apparent on negatives, and all are aware of the importance of clearing this off with cotton-wool before standing

up to dry.

Owing to the more grainy surface of the paper, this deposit does not catch the eye as on the plate, but it is there all the same, and may be removed while wet, as in the case of negatives, although some prefer to defer the operation until the prints are dry and straightened out before trimming

and mounting.

When a tuft of cotton wool is moistened-not soaked-with methylated spirit and rubbed vigorously over the dry print, the dirty condition of the wool soon shows that this little operation is by no means superfluous, and a clean face having been exposed the rubbing should be continued until it remains unsoiled under a moderate pressure. By bearing more heavily, any particular part may be lightened by a partial removal of the silver deposit. Rough-surface papers need more gentle treatment than smooth.

A small bottle containing equal parts of olive oil and turpentine should, along with the methylated spirit, be the invariable companion of the mountant jar, and a few light touches of this applied with cotton-wool, spread evenly over the entire surface of the print, which is then polished with a soft cloth, will considerably enhance its depth and transparency and leave it ready for trimming, mounting, and, if necessary, framing.

It is this depth and luster in the surface of matt bromide prints that is the charm of many exhibition pictures and the despair of the beginner. A number of methods, in addition to the one mentioned above have been put forward from time to time for the finishing of bromide prints, so that the final picture retains some of the "luscious" appearance which is visible when the print is still surface wet.

When in addition to obtaining a certain amount of luster (not shininess or glossiness), it is possible to modify certain of the tones in the picture and assist in pulling the composition together and yet show no signs of hand work, the

ideal method of control appears to be arrived at.

A widely used method among professional workers is that in which the alteration of tones is brought about by the application of finely powdered graphite or stumping chalk to the entire surface of the dry print with a wad of cotton-wool, so that a thin gray veil of tone covers the entire image. High-lights are then touched up and backgrounds softened, etc., with the aid of a piece of soft India-rubber, and the

shadows are strengthened by the addition of further graphite or stumping chalk applied with a leather or paper stump, or the finger-tip covered with a piece of rag. When spotty highlights and weak shadows have thus been adjusted and the desired result obtained, the surface of the enlargement or print is held over the steam issuing from the spout of a kettle of boiling water. Care should be taken not to hold it too near, or to allow the steam to act upon one particular part, lest the heat should harm the gelatin. As a safeguard it is wise to move the print continually to and fro. By this means not only is a satisfactory luster given to the print, but the "working up" is apparently incorporated and fixed in the gelatin so that it cannot be subsesequently moved, and when well done it is difficult to detect the presence of hand work at all in the final print.

the final print.

Bromide chalks or pencils as supplied by dealers can also be used with effect. The entire surface of the print is lightly sketched over with a loose, free touch—strengthening shadows and outlines where necessary. This is very suitable for a strong portrait subject, but, needless to say, a fair knowledge of drawing is an advantage to secure the most successful results. The pencil work is fixed by the steam method mentioned

above.

Another method, and one that has become very popular of late, is the use of ordinary artists' megilp (or a mixture of turpentine, linseed oil and copal varnish), which is rubbed over the entire surface of the print—thinning with turpentine, if necessary. A little ordinary artists' oil color can then be added to the medium to strengthen shadows or to tone down highlights. This is applied with a small wad of linen. The print should be placed to dry in a warm current of air free from dust, and when dry the picture has that particularly rich and juicy appearance in the shadows which is so much sought after.—Amateur Photographer.

Strip Tests in Carbon Printing

ONE of the greatest difficulties encountered by the beginner in carbon printing is the correct estimation of exposure. The experienced printer can tell at a glance how many "tints" a certain negative will require, but a novice is quite at sea and spoils much tissue in arriving at even a passable result. To such we recommend the adoption of the strip-testing system as practised in bromide printing, and, as it is not practicable to hold the shading card while the actinometer is working, a little mechanical device becomes necessary. This is made by cutting three pieces of opaque card the width of the inside of the opening of the printing-frame, one piece being a quarter the length of the plate, one half the length, and the third three-quarters of the length. For example, if the front of the frame has a clear opening of six inches by four we shall require one piece four by one and a half, one four by three, and one four by four and a half. If we take a fairly strong negative we may give the whole of it one tint, then drop on the narrow strip and give another tint, then the halfway strip and the three-quarter strip, giving a tint after adding each. We shall

then get a print one end of which has had one tint while the other has had four tints, two and three intervening. Developing should be done in rather cool water, not over 80 degrees, and we shall then see which exposure is most suitable for the negative. If this test be applied to half a dozen negatives differing as widely as possible we shall get a set of typical densities with their correct exposures. Of course, many negatives will print with less than one tint, and in this case it would be perhaps better to adopt one of the "step" actinometers. In any case, all that is necessary is to establish a definite relation between the actinometer tint and the density of the negative. This does not make any allowance for the varying rapidity of the tissue, but it is assumed that the printer will not overlook this point.—British Journal of Photography.

Getting Definition

WHEN things have settled down a little more, and the lens makers are able to transfer their machinery and workmen from munitions of war to munitions of peace, there ought to be a great boom in the lens industry. It is the ambition of every photographer, and a very legitimate ambition, to be able to use a high-class instrument, and many entertain the belief that it will bring about a marked improvement in their work.

There is no rose without its thorn, however; and the thorn in this case is a big one. To use a lens of the best kind, so as to take full advantage of its powers, calls for something more than the mere attaching of the lens to the camera front. We have to know how to use it.

When an amateur gets rid of some cheap slow lens and substitutes for it a high-grade anastigmat, he sometimes finds to his surprise that his work instead of being better is actually worse than before. He overlooks the fact that his new instrument works at a much larger aperture, and that it has, therefore, much less depth of focus

than its predecessor.

For certain subjects this want of depth is a valuable quality in itself. It enables us to focus on the main feature of the picture, and allow the rest to be diffused and softened. But there are other subjects in which it may be quite the reverse; and in some cases we may even find that we cannot get the degree of sharpness which we require, until we have stopped down to as small an aperture as that of the old lens. This does not mean to suggest that the newer instrument is no better, far from it. We shall get, on the whole, a much better character of definition, and get it generally with a much larger stop.

We must not lose sight of the fact, also, that a high-class lens requires what is, in some respects at all events, a high-class camera. The lens forms a critically sharp image in one plane only, which plane is at right angles to the axis of the lens. (It is understood that we are considering a test subject, such as a flat surface on which is fine detail, as obtains, for instance, in copying.) If we are to profit by the possession of such a lens, we must be able to count upon the sensitive surface of the plate or film occupying that plane



exactly: and with a ramshackle camera this

cannot be done.

For example, the front of a great many cameras cannot be rigidly fixed at right angles to the baseboard. If we hold the top of the front and the top of the back in the two hands, it will be noticed that there is a perceptible play between them, in such a case. Any play in the front will allow it either to be pulled back out of the vertical by the tension of the bellows, or pulled forward by the weight of the lens and shutter. The effect is equally injurious to the definition, whichever it is. It results in the focal plane being tilted either forward or backward, as the case may be, whereas the back holding the plate or film remains at right angles to the baseboard. In such a case, the image may be sharp along a line across the center of the plate, and blurred along the top and bottom. Or the top may be sharp and the bottom blurred, or vice versa, according to the direction in which the front is tilted.

It may be asked if such a defect in the camera is not equally harmful, whatever lens may be used, but the reply is that it is not. Less perfect lenses, for one thing, will not be used at as large an aperture. Instead of working at f/6 or f/6.5, they may have to be used at f/8 or f/11. Consequently when we are using them at their best we have more depth of focus than when we are using the high-class anastigmat at its best, and the effect of this greater depth of focus is to nullify more or less the blurring caused by the

defective camera front.

When we referred to "high-class cameras" being necessary for use with high-class lenses, we did not mean that the camera for such a lens is necessarily expensive. It must be good. Such excellence can be obtained either by costly workmanship or by simplicity of design. To ensure the front of the camera being parallel with the back calls for thoroughly good workmanship in a folding camera, but in a box form camera it can be obtained in the simplest manner. If the box type of instrument is true when it is made, and with machine construction this is easily secured, it will remain true to the finish. substantial connection between the back and the front allows the relationship between the sensitive surface and the focal plane to be maintained in a manner which is not got so easily when the camera is made to fold up.

The folding camera must not only be properly made to start with, it must be handled carefully, or the front will soon be strained and made loose, and when once it has any play it is a very difficult matter indeed to put it right again.

Some cameras are fitted with a useful movement known as a swing front. It is very important in such apparatus that the photographer shall have some mark by which he can tell at a glance that the front is in the parallel position—parallel with the back, that is—and not swing. For the same reason, the swing back should have a similar indicator. Many modern cameras have special catches in the side struts for this purpose.

The very slight degree of depth of focus in high-class lenses calls for accuracy in another respect. The focal plane of such lenses is, to all intents and purposes, flat, and the sensitive surface to receive the image must be flat also.

With glass plates there is no trouble on this score, but when we come to deal with celluloid film the case is different. In small sizes the tension, the backing of black paper, and the grooves or rebates of the camera keep it reasonably flat, and no trouble is experienced in getting an image that is uniformly sharp all over, but when we come to work such sizes as 5 x 4 or larger, it becomes increasingly difficult to keep the film flat enough to be used effectively with the most rapid lenses. We have seen negatives in which there has been a band of blur running across the image, which showed in an unmistakable manner that the film had had a wave or buckle in it along that band at the time of exposure.

For the same reason, the focussing must be accurately done with these lenses, and the longer the focus of the lens, the less will be its depth, and the greater the need for care. We soon reach a size of picture beyond which it is useless to attempt hand camera work with a very rapid lens, because of its want of depth, but precisely where the line should be drawn will depend to some extent upon the skill of the photographer. The fact is a very strong point in favor of the tiny camera—since with it, most of the difficulties originating in want of depth of focus are

avoided.—Amateur Photographer.

The Reproduction of Negatives

THERE are several reasons why, at times, it may become necessary to make a fresh negative from another. It may be the subject is one which cannot be obtained again, and the picture is valued highly, when it is often worth while making a duplicate negative, even if the original plate is not going to be exposed to any risk. If a great many prints are to be made quickly it is a great saving of time to have a second, or even to have several duplicates, since it is not very much more trouble to make half a dozen than to make one. Then again, we may wish to have a negative of greater or less density for some special purpose, and this can be obtained in the making of a fresh negative from the first, leaving that unaltered. Certain processes require a negative reversed right for left, and by making a new negative in a special way it can be obtained with this reversal. So that, for one reason or another, a brief account of the best available methods for the reproduction of negatives may be found of service.

It has been suggested on many occasions that negatives should be made from negatives direct; that is to say, without the intervention of a positive, as in the processes which are about to be described; but in actual practice this has not been found satisfactory. True, negatives of a kind can be made, but they are not necessarily replicas of the original in contrast, nor is the degree of control over their contrasts what the photographer desires to have. Such negatives also, in all cases, are reversed right for left, unless special means are taken to avoid this.

Those who would like to experiment in the direction of making a negative from a negative may proceed on the following lines: In the dark room a plate is placed with the negative, film to film, in a printing frame, and is given a brief

exposure to a white light. The plate may be of the type in use for ordinary camera work, and should preferably be backed. If it is very sensitive the exposure will only be a very few seconds to the light of a single candle at a distance of six feet. It is then placed in a non-staining developer of the ordinary kind and developed very fully. It should be quite black all over its surface, and should have darkened well on the glass side. Without fixing, it is placed under the tap for five minutes to wash out as much of the developer as possible, and then may have a piece of wet black paper laid on its glass side. In this condition it is held, film to the light, in the same position in which it was originally exposed, and given a second exposure, but this time without the original negative, and for about eight times as long.

as long.

The next stage is to place it in a 5 per cent. solution of ammonium persulphate, rocking the dish, and changing the solution for fresh every five minutes until the whole of the black positive silver image obtained in the first development has dissolved away, leaving a delicate negative image in unaltered silver bromide. Then, after a further wash, the plate is put back into the developer, which gradually darkens the cream-colored image, and after this development has gone far enough it is fixed and washed. One great difficulty of this method is that the extent of the second development is difficult to judge. The effect of it is almost sure to be overestimated it needs to be carried a great deal further than that at which it seems right, as the plate loses

very much in the fixing bath.

The writer has succeeded in making very fair negatives from negatives by this method, and by throwing an enlarged image on the plate by means of the enlarging lantern has made enlarged negatives direct. But the results are not reliable. The ultimate outcome depends not only on the exposure and the development of the plate, but is largely influenced by the thickness of the coating on it; while it does not seem possible to gauge the extent of the second development with any reasonable approach to accuracy, so much does the image of unaltered bromide, which disappears in the fixing bath, conceal the action of the developer. It is an interesting experiment, it is true, but can hardly be looked upon as any-

hing more.

Now to come to methods which are not only practical, but are in every-day use. They are all based upon the same principle, according to which a positive on glass is first made, and then by a repetition of the process a negative is made from that positive. One positive may be used to furnish any number of negatives: and if these are all given exactly the same exposure, and are developed side by side in the same dish, we can count on their being identical in contrast and in opacity; so that a number of them may be mounted up on one sheet of glass and a single print made and afterward cut up. It is clear that in this way we can secure a great saving of time and labor when many copies of the same subject are required.

There are two methods in use for making both positives and negatives. One is the carbon process, the other uses dry plates. Most amateurs,

we are inclined to think, will find the latter the easier, since they are already familiar with the development of plates; so we will deal with it first

Some of the text-books lay down the rule that lantern or transparency plates should be used, but this is a mistake. Such plates may have an advantage when the new negative is to have much more contrast than the old one, though even then a good many experienced hands prefer not to use them. Where there is to be no great departure in contrast from the original negative, then whatever plates are used in the camera may also be used for making the duplicate. They should be backed, of course. Whether they are fast or slow, orthochromatic or otherwise, is not important so long as they are correctly exposed and developed.

Some idea of the exposure that is needed will have been gathered from the description given above of making a direct negative. It is extremely short, and anyone unfamiliar with contact printing on rapid plates is almost sure to overexpose. A candle makes a very good illuminant for the purpose, as it is quite strong enough, and if allowed to burn for half a minute or so before making the exposure, it will give a very constant light, so long as it is shielded from draughts.

As everything turns on getting the exposure right in the first instance, it is sound economy to give up the first plate to a series of tests. If an extra rapid plate is in use, the exposures at six feet from the candle may be one, two, four, eight, and sixteen seconds. The distance should be measured and the exposure made by sliding a card along in front of the printing frame containing the negative. The card should be as near as possible to the surface of the negative, so as to get a series of well-defined strips.

The exposed plate is developed and fixed in the usual manner, and after fixing it may be examined in white light, for which purpose a sheet of white paper is wetted and laid on the film side. The strip which has been correctly exposed will then show, when looked at on the glass side, as a decidedly heavy positive. There must be no clear patches through which the white paper can be seen, except along the edges: and although if the paper has printing on it, such as a page of *Photography and Focus*, that printing should be readable through the image, still the picture should look dull, like a gaslight print that has been overexposed and then fully developed. One soon learns to recognize which is the best exposure for the purpose, and having recognized it, the candle makes it a very easy matter to give a fresh plate just the time required.

There is no need to go into the production of a new negative from the positive which has been made in this way, since it is merely a repetition of what has just been done, using the newly made positive in place of the original negative. The positive, it is probable, is less opaque than an ordinary negative is likely to be, so that the exposure of the fresh plate behind the positive is generally shorter than that required to make the positive; but, in this case also, the first exposure should be a trial one in a series of steps. It may seem uneconomical to use up two plates like this,

but actually it is the cheaper course. Even if without trial exposures a passable result has been obtained, one may be quite sure that a better one would have resulted if each exposure had been exactly the best in that particular case, which one can make sure of by means of a trial.

It has been urged against the use of plates for making duplicate negatives in this way that there is always a loss of "quality" in the result. The gradations are never so fine or so complete as they were in the original negative. That there is some very slight loss is probable; but that there is any need for it to be great enough to affect the resulting prints appreciably we do not believe. It seems more often met with when transparency plates are used than when ordinary or extra rapids form the material. With correct exposure in the two cases, and no overdevelopment, a print from the new negative should be indistinguishable from one made from the original relate.

This method gives negatives which are facsimiles of the original, and not with right and left reversed. To secure this reversal, either the positive or else the negative must be made in the enlarging lantern, with the original put into the lantern the reverse way round; or, as an alternative, one or other may be made by the carbon process now to be described. If both positive and new negative are made by the carbon process

there will be no such reversal.

For the carbon process we shall require a supply of "transparency tissue," which is best obtained in an insensitive condition and sensitized as required. We shall also need some clean glasses a little larger than the negative.

These glasses must be coated with a substratum, and so after thoroughly cleaning them with hot water, soap, and a nailbrush, they are well rinsed and then rubbed over back and front with a mixture of 15 grains of gelatin to the ounce of water. The gelatin is soaked in cold water until limp and then the required quantity of hot water is poured over it. It should dissolve forthwith, and may be used while hot. It should have a few drops of a 10 per cent. solution of potassium bichromate added to it—enough to give it a bright color. The exact quantity is not important. After rubbing the glasses back and front with the warm, freshly made bichromate and gelatin solution, they are put up to drain and dry in daylight. The action of the daylight is to render insoluble the bichromated gelatin layer, which then, in spite of its extreme thinness, is sufficient to hold the carbon picture on to the glass. Glasses prepared in this way keep quite indefinitely, so it is best to make a number of them at a time. When dry they may be put away, without anything between them, in plate boxes until they are required for use.

To make the positive we cut a piece of the transparency tissue half an inch larger each way than the original negative and proceed to sensitize it. A 3 per cent. solution of potassium bichromate answers very well for this; but one of the special sensitizing formulæ, such as Bennett's, or a spirit-ammonium bichromate solution, can be used just as well by those who prefer it. Three minutes' immersion in the bichromate

is sufficient, after which the tissue is removed, placed face downward on a clean piece of glass, and lightly squeegeed with a flat squeegee. This removes any excess of the liquid, and the tissue can then be pinned up to dry in the dark.

Artificial light does it no harm; so the writer's practice is to sensitize it just before going to bed and to hang it up in a warm room with the shutters closed to keep out the morning sunshine, if any. It is dry and in condition for use next day. Putting a spoiled negative down on it and running a trimming knife round the extreme edges, which are often defective from fingering and pinning, are cut off, and it is ready for

rinting.

Printing is done by daylight. The process is exactly the same as in making a carbon print on paper, except that the transparency tissue is used, and the printing is carried on a good deal longer. If the best results are to be got from it, however, it is best used two or three days after sensitizing. Twice the exposure required for a print is generally none too much; but there seems to be a greater latitude in exposure when making a positive or negative on glass than in making a print. But a full exposure of the tissue is a necessity. Before putting the negative (or positive) into the printing frame a thin cardboard frame, or mask, should be inserted in the frame, so as to screen the extreme edges all round from light, but to do this from the glass side. This is known as a "safe-edge."

While the print is being made, one of the prepared glasses is placed at the bottom of a deep porcelain dish full of clean cold water. The exposed tissue is immersed in this, and at once curls up. Provided we are sure it is wetted all over it may be allowed to curl, and watched. In a few moments it begins to uncurl, and as soon as the uncurling is quite unmistakable, it is laid face downward on the glass, the two are withdrawn together and lightly squeegeed into contact. A piece or two of wet blotting paper may be laid on the back of the tissue, something flat put on to exert a gentle pressure, and the print

left for fifteen minutes.

At the end of that time the glass and tissue are slid into a dish of water just as hot as the hand can bear and left for a minute or so undisturbed. Soon pigment will be seen to be oozing out between the paper and the glass, and when this has gone on for at least half a minute we may raise one corner of the paper with the point of a pin and gently peel it off the glass. It should come quite freely, leaving a mass of pigmented gelatin on the glass which, on being laved gently with the warm water, gradually reveals the image. When the warm water has developed all it can—the operation should not be hurried—the glass is transferred to a 5 per cent. solution of alum for ten minutes, and then, after being washed in a few changes of water for a quarter of an hour, it may be stood up to dry.

By making a second print on glass in the same way from the positive obtained by the first printing, we get a fresh negative. The contrast is controlled by varying the strength of the sensitizing solution. The quantity given above may be taken as a medium one; if we sensitize

in a 2 per cent. bath the contrasts will be greater;

if a 4 per cent. one, they will be less.

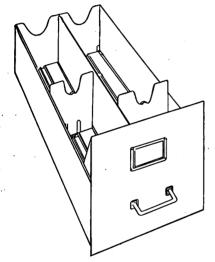
It is claimed for the carbon process that it gives duplicate negatives with no loss of quality whatever. It certainly will yield very fine ones in the hands of an expert; but the amateur who has never worked it before will do well to use dry plates for reproducing negatives. He will at least be more familiar with the operations in general.—RALPH BARTLETT, in Photography.

A Filing Cabinet for Films

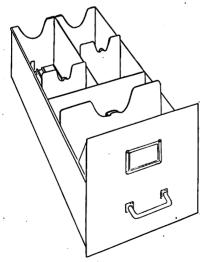
THE increasing use of portrait films necessitates

filing.

The Eastman Steel Cabinet offers a practical means for filing a large number of film negatives,



DRAWER WITH ONE PARTITION FOR 5 X 7 NEGATIVES



DRAWER WITH TWO PARTITIONS FOR BOTH 5 X 7 AND 8 X 10 NEGATIVES

where they are not only protected but are as readily accessible as the contents of an ordinary office filing case. A single unit of this filing cabinet will hold five hundred 8 x 10 film negatives. The drawers have full roller suspension bearings and may be fitted with partitions to hold 5×7 or both 5×7 and 8×10 film negatives. When fitted for 5×7 only, each drawer will hold one thousand 5 x 7 film negatives.

Steel transfer cases may be used for storing the older negatives as they are transferred from

the office filing cabinet.

These filing cabinets are an exceptional convenience, as they allow all negatives of a recent date to be filed in the office, where they may be had for any purpose at a moment's notice. One section of a drawer may be used for negatives which have been proofed but not ordered, the negatives being immediately at hand when the order is given. The cabinets are handsomely finished, are inexpensive, and add much to the appearance as well as the convenience of the modern photographer's office.

A Plea for the Ozobrome Process

It is remarkable that a process so fascinating and full of artistic possibilities as the ozobrome process should need any advocate; yet, so far as I am aware, there are very few people here working at it. I hope this article will induce more to adopt the process.

Now I quite admit that ozobrome can scarcely be called a beginner's medium: (1) In the first place it calls for a good bromide (or gaslight) print, and it is astonishing what a number of photographers there are who find difficulty in producing a really good bromide print, and the still greater number who slur over the finishing stages, viz., fixing and washing. By a good bromide print I mean one of a good pictorial subject, and properly exposed, developed, fixed, hardened and washed. (2) In the next place it calls for exactness, care and thoroughness in manipulation, qualities not conspicuous in most beginners' work. (3) Lastly, it is hardly worth the time involved to make an ozobrome of a print containing as little evidence of artistic perception and selection as the prints of the average beginner.

¹ Hardening is necessary for the non-transfer method, and advisable for the transfer method. The best acid fixing and hardening bath I have used for all purposes is from a formula I found in the original ozobrome book of instructions. It is as follows:

				Α				
Hypo.								1 lb.
Hypo . Water								40 oz.
				В				
Potassiu	m m	ıeta	bis	ulpl	iite			
Water						•		20 oz.
				С				
Chrome	alur	n						
Water								20 oz.
For use, ta	ke 2	pa	rts	A, 1	pa	rt E	3, 1	part C.

But ozobrome is not difficult (I emphasize this), and anyone who wants to make a picture in a medium offering all the advantages of carbon—permanence, variety of color and surface, superior gradation, richness of shadow, and control (the last mentioned to a greater degree than carbon)—and the following important additional advantages:

solutions for at least a week. Solution (a) is a formula I have from a friend. The original concentrated ozobrome pigmenting solution appears to be quite unprocurable. The above appears to be quite unprocurable. The above formula (a) is quite satisfactory. The original ozobrome pigmenting solution was patented, but the patent has expired.

Now arrange four dishes in a row on a table:

3 Pigmenting and Water. Water. Acid bath. bleaching solution.

(a) Independence of light, and the consequent abolition of daylight printing, actinometer, and printing frame.

(b) Suitability of any negative that will give a good print on bromide or gaslight paper, i. e.,

practically any printable negative.
(c) Enlarged pigment prints without enlarged

negatives.
Who can make a good bromide or gaslight print as above defined, will find in ozobrome not only a process that yields most beautiful results, considerably superior in many instances to the bromide prints from which they are made, but also one that from beginning to end is most fascinating in all its details. (I have often spent from 7 P.M. until midnight making ozobromes, and scarcely noticed the flight of time.) Only simple apparatus is required; ozobrome is not expensive.

The following description of the modus operandi will, it is hoped, give a clear idea of the process, but the reader will bear in mind that description is necessarily more cumbersome than demonstration, and will not take fright at what,

admittedly, seems somewhat complex.

There are two methods of procedure, the transfer and the non-transfer. I will describe the non-transfer first.

Buy some carbon-tissue. I do not think ozobrome pigment plasters are now made-at any rate they are unobtainable locally-but autotype tissues are quite suitable.

Now make up the following solutions:

(a) Pigmenting and Bleaching Solution: Potassium ferricyanide 30 gr. Sodium (or potassium bichro-10 gr. mate) 10 gr. Potassium bromide Water 5 oz. (b) Acid Bath: Citric acid . 15 gr. 22 gr. Oxalic acid . 120 gr. Chrome alum Water 30 oz.

Both formulæ can be made up to three or four times working strength and in larger quantities for stock solutions. Even at working strength they keep indefinitely, and the used

Fill (1) and (2) with water (3) with sufficient acid bath, (4) with sufficient pigmenting and bleaching solution. Dish (2) should be much larger than the print to be made.

Have a watch recording seconds handy. Put the dry bromide in dish (1), the carbon tissue (which for the non-transfer method should be a little smaller than the bromide print to prevent frilling) in dish (4). Leave the tissue until it is quite limp, then lift it by the corner and drain for about fifteen to twenty seconds. Place in dish (3), face up, for ten to thirty seconds, according to the result desired. (See below.) Drain for ten to fifteen seconds, and pass into dish (2), face downward; draw the tissue gently across the surface for about double its own length still face downward; lift it out and slide it again under the water face upward. (Be very careful if you want uniform results to do this drawing and sliding process in the same way every time as this regulates the quantity of solution and acid bath left in the tissue to work on the bromide print and set up the chemical action which renders the tissue more or less insoluble in proportion to the gradation of the bromide print.) If too much is washed off, the bromide will not bleach thoroughly and detail will be lost, while the resulting pigment print will be harsh and greatly intensified, but with loss of detail in the shadows. If a surplus is left in the tissue the resulting print will be lacking in depth and the high-lights will be veiled. (Any intentional modification of contrast should be done by a longer or shorter immersion in the acid bathtwenty seconds for normal, ten for contrast, thirty for flatness. Very broad effects can be obtained by printing the bromide rather lightly and giving the plaster five to ten seconds' immersion.)

At once lift the bromide print from dish (1) and slide it face downward under the water in dish (2), bring into contact with the tissue, which is face up, under the water. Lift them out clinging together, lay on a sheet of glass and squeegee lightly but firmly into contact. Leave for twenty minutes to an hour. (During this interval several other bromides can become acquainted with treated tissues in a similar manner.)

Now get a basin of hot water, as hot as can comfortably be borne. Have a kettle boiling to keep up the temperature for the succeeding prints. Put the plaster and adhering bromide print into the hot water, wait a few seconds until the soluble tissue begins to ooze out at the edges, then strip off with a gentle unbroken pull the tissue backing and throw it away, Gently dash the hot water over the bromide print, which now supports the insoluble pigmented image (the bromide image being bleached out as in the ordinary operation preliminary to sul-phide toning). The soluble pigmented gelatin soon washes away leaving the insoluble gelatin image super-imposed upon a bleached silver print. Rinse in cold water for a second or two, and hang up to dry. When dry, fix out the bleached silver image with ordinary strength

hypo, wash and dry.

(If desired the bleached image may be redeveloped wholly or in part with any ordinary developer, or may be sulphide toned, considerable control being possible in this way. Control is also possible while the hot water development is in progress, as in the case of ordinary carbon work, by applying hotter water locally, or by rubbing parts with the ball of the forefinger. The gelatin image is very tough as a rule, unless a longer than normal immersion in the acid bath has been given, or a surplus of acid bath remains owing to insufficient rinsing before bringing the tissue into contact with the bromide print, in either of which cases it is more readily injured. Normally it is much tougher than in the case of the ordinary carbon method, and in the shadows will stand quite a violent rubbing without injury; little experience will soon show how much. The half-tones and high-lights are more delicate owing to the thinness of the gelatin.)

TRANSFER METHOD. — The transfer method is greatly to be preferred (unless it is desired to avail oneself of the method of control referred to above by redevelopment of the

bleached image), and for these reasons: The resulting picture is composed of pigmented

gelatin only.

reversed picture.)

Any surface may be used to support it.

The original L omide is available for further use. It is no more troubleson, as although another squeegeeing is involved, there is no fixing and washing required. (Either method gives a non-

The procedure is precisely the same as in the non-transfer method down to squeegeeing the bromide and treated tissue, but at the end of the specified time (twenty minutes or upward), put the adhering bromide and tissue into cold water, and separate them. This is perfectly simple, and you then hold in one hand the bleached bromide and in the other the plaster which looks just the same as before contact with the bromide, but is in reality insoluble wherever the chemical action has taken place. Drop the bromide into another dish of water, and "forget about it" pro tem.

Take the plaster; as the whole substratum of gelatin is unacted upon and therefore soluble, it is clear that if the plaster were placed in hot water the substratum would dissolve and the insoluble image crumple up and float away. (It would in any case be reversed.) We must therefore get the soluble substratum uppermost before developing, and to do this we use a

transfer paper.

This is simply good quality paper coated with insoluble gelatin. Autotype single transfer papers are ideal, and are made in all useful surfaces, but are unobtainable locally at present, largely, I am afraid, owing to the shocking neglect of carbon printing by Australian amateurs. Until it becomes available a perfect substitute can be made by fixing out and hardening, and washing ordinary bromide paper, using the fixing and hardening bath recommended above. Austral Pearl Bromide papers are made in many fine surfaces, all qui e suitable. Treat a few pieces in this way att r making your next batch of bromide prints, and put them aside for subsequent use as transfer papers. (The transfer paper should be slightly larger than the tissue to prevent frilling.) Take the plaster then and bring into contact under the cold water with a piece of transfer paper, as soon as the transfer paper has become limp. Lift out and squeegee firmly into contact, using moderate pressure. much prefer a roller squeegee for this business, but am quite aware that in this preference I am unorthodox. Quite a small squeegee will do for the largest work, about 5 in.) Place the adhering papers between blotting sheets under a moderate weight for ten minutes to an hour. (During this interval you can separate several other bromides and plasters, and squeegee the plasters to the transfer papers, placing them under the same weight one on top of the other, separated only by blotting sheets.)

Now place plaster (or tissue—I have used the words synonymously throughout) in hot water, and proceed as in the non-transfer method, viz. strip the plaster backing, and develop, rinse and hang up to dry. When dry the print is finished.
You may now turn to the bleached bromides,

rinse and redevelop them in amidol (preferably) or any other non-staining developer, wash for a few minutes, dry, and they will be ready for pro-

ducing a further bath of ozobromes.

If this description of the procedure be thoroughly grasped it will be realized that there is nothing from beginning to end calling for special skill. To assist the reader to obtain a clear mental view of the process, the following outline of the different stages may be of use.

OUTLINE OF THE NON-TRANSFER METHOD.-Preliminary.—1. Materials: Bromide print, piece of tissue (slightly smaller), four dishes (one very large), squeegee, pieces of blotting paper, two pieces of plate glass (one for squeegeeing upon, the other to act as a weight), pigmenting solution and acid bath, and hot water. water can be heated while the print and plaster are in contact.

2. Pour cold water into two dishes (including the large one), acid bath in another, and pig-

menting solution in the fourth.

Actual Working.—3. Immerse bromide in water; plaster in pigmenting bath until limp; drain fifteen seconds, immerse in acid bath ten to thirty seconds, drain fifteen seconds; bring into contact with bromide under water (taking care to follow specified procedure), squeegee into contact (all this can be done in four or five minutes easily); leave for twenty minutes to an hour, and treat some more prints and plasters in the interval.



4. Separate in hot water, develop, rinse and

5. Fix and wash (a week after if you like).

OUTLINE OF TRANSFER METHOD.—Preliminary. -1. Materials as under (1) above (but tissue slightly larger than print) and transfer paper (slightly larger than the tissue) and developer for bleached bromides (which need not be made up until all other operations are completed).

As under (2) above.

Actual Working.—3. As under (3) above.

4. Separate in cold water, squeegee tissue onto transfer paper; leave ten minutes to one hour; separate and squeegee some more papers in the interval.

5. Develop in hot water, rinse and dry.6. Develop bromide prints.

SOME CONCLUDING NOTES.—Six to more ozobromes by the transfer method, 9 to a dozen by the non-transfer method represent a fair evening's work, say, three hours. And they will seem little longer than three minutes, so engrossing and

fascinating is the process.

Frilling is almost always due to using plaster or transfer paper respectively smaller than print and plaster in the transfer method, and to using a plaster larger than the bromide in the nontransfer. Blisters are rare—they may be caused by splashing very hot water from a height during development, or by leaving the plaster for an excessive time in the acid bath. All the Autotype tissues I have used (and I think I have used most of them), are quite suitable; but red chalk is difficult.—Australasian Photo Review.

The Dark-room and its Fittings

When we consider the amount of time which a photographer spends in his dark-room, it would be supposed that he would do his utmost to plan it so that the space at his disposal should be utilized in such a way that the work should be carried out in the most convenient manner possible, and that all unnecessary steps and move-ments should be avoided. But in many cases this is not done, and the room appears as if it had been fitted up by a builder without any knowledge of photography, and that he had placed the various fittings where he thought that they looked best, without reference to their use. To prove this I may instance one place fitted up only a few months ago in which the red lamp was placed immediately behind the operator, so that he was effectually prevented from seeing what he was doing when he stood at the sink.

The smaller the dark-room the more need for careful planning, and we might well take a lesson from the ship-builders, who manage to squeeze the maximum of accommodation into the mini-mum of space. In the first place, I would point out that in the majority of dark-rooms too much room is allowed for the operator and too little for the fittings. Let use take the case of a floor space of 6 ft. by 4, which we may consider the minimum (although I have often had to work in less), and see how we can plan it to the best advantage. If there happens to be a window in it, it should be ignored for lighting purposes, although it should be made to open easily for ventilation. This gives us a free hand for the

placing of the sink. I should then arrange things in the following way. The doorway 2 ft. wide should be cut in one of the 4-ft. sides, preferably on the left hand. This must be well rebated so that in case of a slight shrinkage no light will be admitted. A bench 2 ft. wide is run the whole length of the room, and in the center of this a 36 x 22 Doulton or lead-lined sink is fitted, leaving two solid pieces 18 x 24 at either end, these being covered with lead or ruberoid or well coated with asphaltum varnish. Lead is the cleanest and most durable, and should be used if the expense is not objected to. The red lamp should be placed over the left back corner of the sink and the water tap over the middle of the sink, not projecting too far forward. Across the further end of the room a plain bench 15 ins. wide is fixed between the wall and the long bench. This answers for filling-in, or if it be preferred, a printing-box may be installed here and filling-in done on that part of the bench which is just behind the door, the latter, of course, being made to open outward. A narrow shelf for bottles and measures should be placed over the sink, and a shallow cupboard with the door hinged at the top fixed over the filling-in bench to receive exposed plates. The reserve stock of plates can be stacked on a shelf under the bench. The fixing-bath or tank is put on the bench to the left of the sink or, if preferred, on a shelf below it. I do not, however, care for this arrangement, as it is then difficult to avoid splashing hypo on the floor. A shelf or rack may be fitted over the end bench to receive spare dark-slides, inner carriers, and the like.

So much for the general plan. Now let us go into the details of the fittings.

As I do not know what illuminant will be available, it is not possible to give precise details as to the red lamp, so that it can only be dealt with in general terms. One thing is important, that it should be of adequate size. The minimum frontage should be 10 x 8 and as much larger as convenient. This allows of a safe medium being chosen and still having a good working light. Now as to the medium: Some ruby glass is safe for use with rapid plates, but much is not, and the eye is not a safe guide. I have seen a very deep ruby which passed an appreciable amount of blue, while a lighter color, such as that used in the old Perfection lamps, was fairly safe. For use with an oil light or carbon filament one thickness of ruby glass and one of canary fabric seems quite safe, or one thickness of orange glass and one of red fabric. The metallic filament lamps are more actinic, and if these are used it is better to use the Wratten or Lumière "safe lights," which are scientifically constructed so as to be quite secure against fogging. After all, the best way is to make a practical test with the plates it is intended to use. If a plate partly covered with a piece of metal-a penny will do-can be exposed in the position usually occupied by the developing dish for five minutes, and after devel-opment in a covered dish for the same period shows little difference between the covered and uncovered parts, the lights can be considered as reasonably safe. For bromide printing a brighter light is required, and I have found that two thicknesses of canary medium bound up between glass give a safe light with any bromide paper I have used. If gas is used, the ordinary fish-tail burner is the best, as the light is yellow to begin with, but as some gas gives but little light when used in this way it may be necessary to use a small inverted mantle. With this a sheet of yellow glass may be added to the fabric. A single thickness of Perfection glass seems quite

safe for bromide papers.

There is a certain amount of choice in the material of which the sink is composed; it may either be composed of wood lined with lead or an asphalt sheeting such as ruberoid, or, what I consider better, of stoneware. If the latter be chosen, it is very necessary that it should be of the hard vitrified quality which has a dirty yellow This has no glaze to flake off, and will last until it is broken, which, I may say, is an unlikely contingency. There is a much nicerunlikely contingency. There is a much nicer-looking quality which has a white glaze on the inside. This I have not found reliable, as the glaze is liable to crack, and when the chemicals begin to percolate into it the glaze comes off in flakes. Zinc or galvanized iron must not be used for sinks, as they rapidly corrode and become leaky. Slate is also a bad material, as it is likely to flake away, and, even if it does not, leaks are likely to occur at the joints. With any sink it is advisable to use a rather close wooden grid covering the whole bottom. This saves many breakages both of measures and negatives, and has the advantage of keeping the dishes out of the water which is always present, more or less, at the bottom of the sink. A trap with a screw plug should be fitted to the waste pipe, so that any obstruction can be removed without having to call in the plumber.

The question of dish versus tank development cannot be dealt with here, but a word on the materials of which dishes and tanks are composed may not be out of place. Porcelain dishes are most generally used, but they are heavy and fragile, and I strongly advise the use of a good make of enamelled iron in their stead. Even make of enamelled iron in their stead. these require a certain amount of care in use, but it is surprising how many falls and knocks Good vulthey will stand without chipping. canite dishes are also very serviceable, but they are costly and not now easily procurable. Celluloid dishes are only useful for very occasional use; even the best of them are very apt to crack at the corners, and there is also a tendency for them to warp, often to an extent which renders them useless. Wooden dishes are convenient when large numbers of plates are dealt with, but it is difficult to find a coating which will resist the alkali in the developer. I used some, many years ago, of American make which stood very well, but I could never discover the composition of the varnish. Possibly gas-tar diluted with naphtha, which was recommended for the purpose by Mr. F. A. Bridge, would do, but I cannot speak from experience. I have tried shellac with an alkaline developer, and the wood was bare in Tanks for developing and fixing are The amateur steadily growing in popularity. The amateur tanks made of brass or zinc are of little use to the professional who does not want to develop in daylight. Good wooden tanks with loose racks seem to answer well, and a later model, with an enamelled tank and a wooden rack, seems better still. The ordinary porcelain tanks are not suitable for development, as they require an enormous bulk of solution in proportion to the plates they hold. Such tanks are, however, useful for fixing, if one is careful not to drop the negatives in too suddenly, when either plate or tank may suffer. On the whole I prefer a stout lead-lined tank for hypo. Washing tanks are best made of plain zinc; the white japanned ones look clean, but unfortunately they are made on a base of sheet iron or steel, and once the protective coating is damaged corrosion goes on apace. One advantage of a zine tank is that it can be cheaply repaired. I have one half-plate tank which has now its third bottom; the others have been rubbed through. The sides and grooving are strong and good after twenty-five years' wear.

A little point I had nearly forgotten is that of taps. The swing arm tap is attractive to look at, but it quickly goes wrong, and when it becomes leaky it is difficult to repair. A good ordinary tap with an anti-splash, to which a short length of rubber tube can be attached, is the most practical arrangement. It is a good plan to have an extra tap to supply the washing tank, so that plates do not have to be rinsed over the tank. If there is only one tap the rubber tube can be lifted out of the tank for rinsing purposes.

Last, but not least, comes the question of ventilation. We must not trust to badly fitting doors and partitions for this. A proper inlet and outlet for air must be provided, or the operator's health will suffer. I have found it answer well to have a row of inch and a half holes, well trapped, made in the partition below the sink and another similar row on the same side near the roof. With this arrangement a current of air is always passing just where the operator usually stands. Care must be taken not to block the inlet with boxes, tanks, or the like. If it be possible to fit an exhaust fan, worked by electricity or water, in the dark-room, by all means do so. It is a luxury in hot weather.

Although I have only specifically described a very small dark-room, it does not follow that such a size is a desirable one, and the larger ones, besides being more comfortable to work in, allow of more fittings, such as enlargers, being placed therein; the principle is the same; as much sink room as you are ever likely to need and plenty of benches. Do not use the dark-room as a store for lumber. A small, clear space is better than a large one in which you have no room to

turn.—B. J.

Spots and Stains

How often it happens that after a batch of prints has been made there is the fly in the ointment in the shape of spots or stains, which have made their appearance either during the manipulations or after the prints have been laid out to dry. Not a day elapses but we receive specimens of these spots and stains, with the request that we shall suggest some method of removing them, or at least say how they may be avoided in future.



Dirt

Ninety-nine times out of a hundred this one word is all that is necessary to explain the marks that are complained of. Not that dirt in the ordinary everyday sense of the word is meant. Many workers quite fail to realize that a dish may look quite clean, and yet be very dirty, indeed—chemically. Ordinary precautions in about half a dozen directions will almost ensure the absence of all but occasional marks, and possibly the best help will be afforded if these precautions are indicated.

With silver printing processes, such as P. O. P., self-toning papers, plain salted paper, gaslight and bromide papers, "metal spots" sometimes occur. These are much more likely to be found with print-out papers. A tiny—often, to the unaided eye, invisible—particle of metal lodges on the surface of the paper, and causes an aggregation of silver around itself, producing a black speck surrounded by a white ring. These "metal spots" occasionally are in the paper when bought, but more frequently the particle of metal lodges on the paper from the hinge or spring of the printing frame, constant wear of these parts causing particles to be dislodged. The frames should be frequently dusted with a stiff hoghair brush and the felt pads brushed with a clothes-brush. Sometimes such specks may be picked out of the film of the print with a needle mounted in a pen-holder, and the tiny hole in the surface of the paper touched in with a little spotting color and gum. Metal spots frequently show before toning of the print is commenced.

Spots Appearing During Drying

May usually be attributed to something which has come into contact with the print after its removal from the washing water. There are two probable causes. Mounts are often used with gold printing, or a gold line or margin. Where this is actually gold leaf all will be well, but if Dutch metal or bronze powder is used a plentiful crop of spots may be expected sooner or later. They may even take a year or two to make their appearance. If after mounting, or if without mounting, the prints are dried near a coke fire, particles of coke dust are almost sure to settle on the prints, and such particles seem to bleach out the image, leaving small white or yellowish-white spots. There is no remedy in either of these cases, but the precaution to avoid the spots is obvious.

Chemical Dust Spots

Careless workers slop solutions about on floors, benches and shelves, and such splashes dry up, leaving a crystalline deposit of the salt which was held in solution. Such deposits are frequently very light and powdery, and readily move about in the air in the form of light dust, settling, however, as soon as the movement of the air which tends to keep them suspended has ceased. Some chemicals are particularly prone to produce spots, and possibly amidol is as bad as anything. When weighing out the dry amidol a few particles may readily be carried by a faint current of air on to the bench, and if such should

get on to a print of any description indelible brown spots will surely make their appearance. It is well, therefore, to make a practice of weighing amidol away altogether from the workroom, say over the scullery sink, where any stray particles are likely to be dissolved and carried away harmlessly. Particles of other developers are equally dangerous, and after making up any solutions it is wise to wipe down the bench with a good-sized wet sponge as a precautionary measure.

Hypo Stains

Naturally, those papers in the manipulation of which hypo is not used, are immune from these stains. Gaslight and bromide papers are not so liable to be stained by hypo as are the various print-out papers. The more slight the trace of hypo on a silver print, the worse the stain. Hypo in excess will dissolve the silver salts, but a trace of hypo changes them into silver sulphide, and in the old albumen paper days a hypo stain was spoken of as "sulphuration." A thorough scouring of hands, measures and dishes is necessary when commencing to tone, and hypo solution or crystals must never be touched until all the prints are ready for fixing. The stains are of a brownish color and are quite irremovable.

Untoned Patches

Occasionally well-defined spots of small area occur which suggest hypo stains, but are, in reality, untoned patches, air-bells having prevented the action of the toning solution. These may, of course, be seen if care is taken, and usually the prints passing over each other in the comparatively shallow bath will dispel such airbells.

Uneven Toning

Properly speaking, uneven toning is not a stain, though the effect is very much the same. Too strong a toning bath will tend to tone the margins of the print more rapidly than the center, and if the print is not kept moving the action may be uneven. If the print after toning is carelessly placed in the dish of clean water prior to fixation, parts may remain above the surface, and so the toning bath, not being quickly washed out of the gelatin film toning, will proceed in parts, and bands of various shades of color will be produced, the print being bluer where it has been out of the water.

In Carbon Printing

Yellow stains may occur when the bichromate has not been entirely removed from the transfer paper. With a well-exposed print this is not probable, for the fairly long development necessary in such cases will usually dissolve out all the bichromate salt. A rapid development, however, followed by too short a time in the alum solution, may be insufficient for the removal of the yellow stain, especially with thick papers. This may not be noticed when working in gaslight, but be quite apparent in the whiter daylight. In this case, however, another and more prolonged immersion in the alum bath will remove the yellowness.—The Photographic News.



REPLIES TO QUERIES



A Correction

In reply to John Edwards, on page 394 of our August Number, in the formula on toning of prints, the quantity of chloride of gold should read six grains and not sixty, as given in error.

PATENT NEWS

Coloring cinematograph and like long films; Method of and machine for——. E. C. R. Marks, London. From J. L. Lasky, New York. Eng. Pat. 126,745, 14.11.17. (Appl. 16,730/17)

A NEGATIVE of the film is prepared so that its unexposed parts correspond with those parts of the positive which are to be colored and the gelatin of the exposed parts is further hardened, e. g., by treatment with a solution of bichromate. This negative is passed through a solution of a suitable dye, which is absorbed only by the unexposed portions, and then brought into register with the slightly damped positive for a suffi-cient length of time to allow the transfer of the dye from one film to the other. In the machine described the two films in contact pass over a drum moving at the requisite speed to maintain contact for the required length of time, and means are provided for stretching the positive film to compensate for the extra elongation of the negative film by absorption of water and also for giving sufficient tension to ensure complete contact of the two films on the drum. Several machines can be arranged side by side for successive treatment of the same positive with differently colored negatives and one dye treatment of a negative will serve for the coloring of several positives.

Photographic Materials and Processes

X-ray photographs; Contrast and exposure in through metals. R. E. Slade. Faraday Soc., April, 1919.

The relation between the density, D, and the exposure E, in a photographic film is the same for x-rays as for ordinary light, and to obtain a true photograph this relation should be expressed by D = A + B log E, where A and B are constants. The actual relation diverges from this for high and for low exposures, but owing to the very thick layer of emulsion on x-ray plates it is usually found convenient to work in the upper part of the region of under-exposure. To get the maximum photographic effect for a given exposure when photographing through metal the hardest possible radiation should be used. If radiations of different wave lengths are used it is the hard radiations which, by virtue of their greater photographic effect, determine the contrast obtained, though the contrast would actually be greater with softer radiations. It is unlikely, however, that the wave length will be such that

insufficient contrast will be obtained. In photographing through iron with a nickel anticathode (characteristic K radiation of wave length $1^{\circ}6 \times 10^{-8}$ cm.) differences in the thickness of the iron of the order of 4×10^{-6} cm. should be evident if sufficient exposure is given. In practice a wave length of $0^{\circ}3$ to $0^{\circ}45\times 10^{-8}$ cm. should be sufficient for ordinary use. This can be obtained by using a platinum or tungsten anticathode with as large a spark gap as possible.

Photosensitizing dyes; Intermediates used in the preparation of —. I. Quinoline bases. L. A. Mikeska, J. K. Stewart, and L. E. Wise. Jour. Ind. Eng. Chem., 1919, xi, 456-458.

The parent bases for the production of the photo-sensitizing dyes. Pinaverdol, Pinacyanol, and Dicyanin are quinoline, 2-methylquinoline, and 2.6- and 2.4-dimethylquinolines. The well-known reactions by which these are obtained from aniline or toluidine have been studied and certain modifications introduced so that they may be prepared on a fairly large scale in the laboratory. The chief innovation is that extractions with ether are employed instead of steam distillations.

Photosensitizing dyes; Intermediates used in the preparation of —. II. Quaternary halides. C. H. Lund and L. E. Wise. Jour. Ind. Eng. Chem., 1919, xi, 458-460.

The quinoline bases mentioned in the preceding abstract are treated with an equimolecular quantity of methyl or ethyl iodide in a round-bottomed flask connected to a reflux condenser, care being taken to modify the reaction by cooling when it has once set in, except in the case of the bases with methyl in position 2, which require prolonged heating on a water-bath.

Photosensitizing dyes; Synthesis of —. Pinaverdol and Pinocyanol. L. E. Wise, E. Q. Adams, J. K. Stewart, and C. H. Lund. Jour. Ind. Eng. Chem., 1919, xi, 460-463.

The authors have prepared about 15 dyes of this type by following the instructions of the original German patents. Their product Pv I is identical with the German Pinaverdol or the Sensitol Green of the Ilford Co. It is made by slowly adding sodium methoxide solution to a solution of dry quinoline methiodide and 2.6-dimethylquinoline methiodide in boiling methyl alcohol, and allowing to cool slowly. Another product, Pc IX, is identical with Pinacyanol or Sensitol Red. It is obtained by adding a mixture of sodium hydroxide and formalin to a boiling, alcoholic solution of quinoline and quinaldine ethiodides, air being first expelled, then diluting somewhat with boiling water, and allowing to cool slowly, when lustrous, bluish-green needles are deposited. There is no real evidence that quinoline ethiodide enters into the reaction at all and if it is replaced by potassium iodide, a dye, Pc X is formed, though in poor yield, which is very probably identical with Pc IX. Pc IX, like Pv I, is a quaternary iodide. If transformed into the chloride by reaction with silver chloride in concentrated hydrochloric acid, it gives Pc XII which is more soluble than the iodide.

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PERSONAL CAMOUFLAGE IN PORTRAIT PHOTOGRAPHY

By HERBERT F. LANG

ATURE introduced the art of camouflage ever so many years ago and yet one cannot fail to observe the practicability of its application to modern times. If it were not for the war I doubt if many people would have known that there was such a word. It is true that many of us have done and are doing things today in our every-day life that are based upon the principles of camouflage. We may not realize it, but we are, nevertheless, constantly employing numerous devices in order to present to the other fellow the "butter side" of our affairs, whether it be our personal appearance or our business. When Jones stops us on the street for a brief moment and inquires as to our business, we invariably reply, "great!" whether it is or not. Camouflage! The vendor of pink lemonade at the circus grounds appeals to our dry and parched throats as he displays the cool-sparkling-biggest drink (and it looks it) in town, and invites us to partake

thereof and be the judge; but, alas! we discover the camouflage—but just as crude is the ball-park Svengalli who makes three peanuts play the role of a whole bag. This is the unhappy side of its application. On the other hand there are many benefits to be derived from some of the varied uses of camouflage.

Without discussing at length its useful purpose, let me confine myself to its application to the art of portrait photography. It is the best example of art for art's sake that I can give you.

The photographer, and it is the man who specialize in portraiture to whom I have reference, deals principally with light, shade and color. We see an object only by the light reflected from it. It may be reflected green, red, blue or white light. Some colors affect our eyes to a far greater extent than others. It is only natural, then, that an object reflecting a bright color will attract our eye much more quickly than one reflecting a less bright color. Take, for in-

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stance, red. This is a color possessing the longest wave-length, and is capable of striking the retina of the eye the soonest. Suppose we place side by side on a table a red and a green ball, both of the same size, then ask someone to point out the larger one. Nine times out of ten he will choose the red one. Apply the same principle to the wearing apparel of a woman or man. If they are corpulent, then you know it is not to their advantage to wear a bright or a light color. They can camouflage their size by wearing clothing of the proper shade and design.

It is my purpose to discuss the art of dressing for the camera or even every-day life, wherein a person may camouflage his figure and even his faulty face. Almost invariably the artist's good judgment is solicited by Milady before she presents herself to the camera and it is hoped that these remarks will be of some assistance to you in helping her

choose her own gown, etc.

Astout man or woman should of course dress in a dark material, one that will photograph dark. Blue is a good color. It has a peculiar tendency to destroy roundness. Black has the same effect. Glossy satin, spangled material, gold or silver weave, and heavy satin are not intended for the corpulent form. They reflect a great amount of light, thereby increasing the size of the wearer. If a stout woman intends to wear anything bright, let it be in her head-dress. A string of pearls or colored beads, at least a yard long, hung about the neck, and terminating in its entire length in an acute angle, will establish a good line. Anything of a shorter length adds nothing, but rather mars a pleasing effect.

Most photographers employ the use of a vignette on a stout person as a mechanical means of concealing excess flesh. Personally I consider this method as prehistoric as the head-rest. Certainly one cannot achieve anything artistic by its application.

Mr. Charles H. Davis, of New York, an expert on posing of hands, does not even approve of a bust picture. He claims that the Divine Maker gave us arms and hands, and why not include

them in a photograph? To include a stout woman's arm in a head-andshoulder portrait would handicap one at the start in making a woman's appearance less stout. I use a piece of dark blue velour, which I drape over the shoulders of my subject. If she has worn anything light, I show only a long Vshape portion at the neck, the rest of her anatomy is hidden beneath the delicate folds of the drapery. The more the lines slant down in a space the greater the length and the more narrow the area looks. Always avoid horizontal lines in the composition wherein a stout person is used as a subject, and adversely with one that is thin. A chair with a high back—a style rather ecclesiastical—is excellent in establishing the basic line upon which to work up the picture.

Let us consider a stout man. I cannot understand why so many of them wear light plaids and checks. It certainly does not serve to lessen their degree of plumpness. A stout man, like a stout woman, should dress in dark clothing. As a rule, he is sans waistline. usually wears a belt, but this means of support to his trousers is as useless to him as two ingrowing nails on a toe. What then does he gain in appearance by wearing a belt? Like a strip of black velvet bound around Milady's neck, a belt helps to establish the size. It certainly does not give length. Request This will him to remove his waistcoat. increase the amount of shirt-material appearing in a V-shape fashion between his coat and collar; the deeper this V, the more slender his appearance. Let a man with little or no neck wear a soft bow tie. Although in effect it really does constitute a line running across him, it sets up an artificial break, which the collar fails to do, thus deceiving him into thinking he has a neck.

The secret of success in handling a stout person, man or woman, is to tone down to the extreme all light falling on the clothing. Do not light the face too softly, slightly undertime and develop normally. Personally, I prefer a rather harsh lighting on the face rather than one which produces roundness.

I have met with tremendous success with back lighting on subjects with

ordinary features. Throw the light on the hair from a direction in back of the subject. The resultant halo of light detracts from the plain face which should be in shadow, thus producing a beautiful effect. Of course, it is not possible to handle a man in this light very often. If he is bald or turning gray, he usually resents any line or top-lighting. Some women censure this lighting also.

If a girl has a thin neck, I use a furpiece to hide this fault. It is best to elevate the camera above the eyes of the subject, thereby foreshortening the long neck. If maline or tulle is used in draping the shoulders of the subject with a top-lighting it is difficult to tone down this filmy draping and it is apt to be rendered too harsh. The most successful lighting for a person with hollow cheeks is one which comes from the top and rear. Keep the face in the shadow.

A capable modiste or tailor, who understands the principles of delineation in respect to the human figure, can do much for the portrait photographers in his application of camouflage to his camera subjects.

THE PREPARATION OF FERRIC OXALATE

By E. J. WALL, F.C.S., F.R.P.S.

AVING for some years been in the habit of making ferric oxalate, possibly the method I adopt may appeal to those who may feel inclined to try making platinum paper.

The process was originally suggested by von Huebl, who is a recognized authority on this process. It is, I think, rather less troublesome than that described by Alfred J. Jarman (*Phot.*

Jour. Amer., p. 350).

Ammonia-iron alum, a stable salt of very constant composition, is the starting-point. This occurs in large amethystine crystals, which give a brown solution in water. Add 520 gm. of the crystals to 150 c.c. of distilled water in a 1000 c.c. beaker, and heat with constant stirring till all is dissolved; then add ammonia water (26° Be.) 200 c.c., and distilled water, 200 c.c.; stir well for five minutes, then transfer to a tall 1000 c.c., cylindrical graduate and fill right up with water and allow to settle.

Then, by aid of a rubber tube siphon, decant the supernatant liquid; fill up with water and again allow to settle; siphon off liquid till it is no longer alkaline to litmus paper.

Finally the precipitate of ferric hydrooxide and water must not measure more than 870 c.c. in all. To this add 215 gm. of c. p. oxalic acid and stir well and place in the dark-room, giving it an occasional stir or shake. At the end of two hours pour out a testtubeful of the liquid and examine by daylight. color should be a pure apple-green. If it shows but the slightest trace of yellow, and all the oxalic acid has dissolved, then it proves that the oxalic acid was not quite pure, and a little more, probably 2 gm., will be enough and the solution shaken and examined in white light till it looks pure green; then filter off from any undissolved acid.

The resultant solution, when made up to 1000 c.c., will be a 20 per cent. solution of ferric oxalate, plus 1.2 per cent. oxalic acid, which is just the right

strength for platinotype.

Ferric oxalate is light-sensitive in the presence of organic matter, therefore the stock solution should be kept in the dark-room. It is sufficiently sensitive as to be spoiled by the action of a naked mazda lamp.

THE LENS FOR STRAIGHT PICTORIAL PHOTOGRAPHY

By "FLAMBEAU"

"Inness was constantly experimenting in the direction of more complete synthesis, wherein form was only suggested, and the great motive aimed at was the character of the scene and the spirituality it embodied."—CAFFIN.

AN artist must use suitable implements or he cannot hope to gain a position of prominence for himself, or aid in raising the standard of the medium which he employs. A landscape painter will not select brushes that only the house-painter uses, or a violinist will never win applause or fame if he performs with a bow like that of the 'cello player. Likewise a pictorialist cannot promote the interests of photography as an art, or secure recognition for himself as an artist, if he works with instruments that are inappropriate. If he wants straight artistic results, to succeed he must have a lens adapted to his needs.

Until the last few years, photographers have not had such an instrument. Those furnished him give too much or too insistent detail and produce other undesirable features. Every little item is brought out by these everywhere to the fullest extent; light in its varied aspects is rendered, in most cases, untrue or obtrusive; the different planes are so abrupt, and atmosphere so eliminated that most of the pictorial effect is lost.

As a consequence, ever since photography began to be taken seriously as a means of artistic expression, those who recognized the unfitness of the fully corrected lenses for the use of pictorialists have sought ways of overcoming their artistic inefficiency. Mrs. Julia Margaret Cameron soon had a diffusing arrangement made whereby detail could be subdued or suppressed, which resulted in such effective portraits as her "Herschel," "Tennyson" and The first exhibition work I others. ever saw of the late H. P. Robinson was printed on the roughest kind of paper put on stretchers, in an effort to remedy the faults of his lens and modify detail. Then came enlarging through bolting silk and many other devices for the same purpose, all of which are so familiar I need not enumerate them. It was not until the soft-focus lens was constructed in response to a long-felt want, for F. H. Day, that different opticians in America gave to photographic artists the proper instrument for pictorial purposes. Now there are several firms making these; and some of them produce excellent artistic effects, unknown before.

Many pictorialists, especially in the United States, now use no others. Professionals have been taking them up and, as fast as the public is educated. will work with them more and more. Motion picture interests are employing them for certain parts of their productions. And abroad—although not to the same extent as in America exhibitions and reproductions disclose their use, following the lead of Mr. A. L. Coburn, one of the foremost exponents of them. The Earl of Carnaroon, whose delightful portraits and figure studies have won such favor, stated recently that some of them were the product of a soft-focus lens; and that unrivaled marine artist, Mr. F. J. Mortimer, in an illustrated article published a year or two ago, commended them for por-traiture. We see the gradual adoption and advocacy of these lenses for straight pictorial photography, which awakens the hope that their employment will soon become general for artistic purposes.

The anastigmats are wonderful for scientific and recording work, and too much cannot be said in their praise; but for artistic results the soft-focus lens is very much superior, in my opinion. It is true, some of the most celebrated photographic artists use fully corrected lenses entirely; but it will be found, I think, upon investigation, that their fame is to be placed, not to the credit of their lenses, but to their after-treatment. Hand-work or brush-work have compensated the unsuitability of their

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implements and made possible the more or less admirable effects they have achieved. Photography has been thereby put in the position of a cripple in need of a crutch to stand on. Their brushes would have been unnecessary, it seems to me, if soft-focus lenses of correct construction had been used throughout; and these skilful artists might have done even better with such a lens direct than in a roundabout way with an anastigmat.

Why I advocate only straight methods is that I am anxious to see photography attain an unquestioned place among the arts. This has been denied to her in most quarters and only grudgingly accorded her in others. It looks to me that unless photography—which is painting by light—is done entirely with a lens, and if brush-work is resorted to instead, or in part, the sponsors for that deviation are furnishing their opponents with all the reason they require to win their case. For where lens-work ends photography ends as an art (except for the chemical treatment necessary to develop the image and print, both impressed by light) and where other media are used to help out there is a confession of artistic failure in photography. With a soft-focus lens, in hands educated to its use, the entire work can be done by pure, straight, unaided photography, and so easily and well as to convince almost every unprejudiced person that she has attained to artistic rank of no mean order and cannot be displaced.

I do not believe—although this will be questioned—that the highest photographic art can be produced by any other than a suitable semi-corrected lens, done by straight methods. I mean art rendered in the more modern style, "wherein form is only suggested and the great motive aimed at is the character of the scene and the spirituality it embodies." What is required is not a transcript of nature, as sharp and itemized as possible, such as is made by an anastigmat, but the spirit, the life of nature interpreted through suggestion; in place of facts, forms, objects merely, the hidden meaning, the things unseen, unsought, unknown heretofore and revealed only by the artist, like some of our famous modern painters, who have learned the requirements and the best means whereby their knowledge can be set forth. Now, an anastigmat can only state or assert, never suggest; and it has other shortcomings for artistic purposes; while in the hands of a good worker the soft-focus lens will enable him to subordinate the material so that the spiritual is evoked and impresses; will help to tear away the physical enswathement and reveal the deeper truths. Just as "one does not see the mirror, but be-



BY LOUIS FLECKENSTEIN LOS ANGELES, CALIF.

holds the image it reflects," so the softfocus lens, and no other, can disclose nature's charms, oblivious of the envelopment in which they appear.

All that an anastigmat will give that is desirable for artistic purposes can be secured with a partially corrected lens used intelligently; and some additional qualities that are not possible, or not to be had so well, by using the former. Where the soft-focus lens scores is as follows: In getting the feeling of more abundant and truthful atmosphere; in

rendering the different effects, intensities and variations of light; as a consequence, in interpreting moods, "since everyone of nature's moods can only be rendered by the depiction of natural light,"* and, finally, in expression—the chill and dreariness of winter: the impression of summer heat; the loneliness of early morning; the dreaminess of afternoon; the stillness of evening, etc. Try to get these with an anastigmat and see how seldom it succeeds; attempt them with a soft-focus lens and ascertain how rarely it fails. Breadth, suggestion, mystery, simplicity—will these be satisfactory if produced with an anastigmat?

Now, not every picture made by a partially corrected lens will do credit to either the implement or to photography. There have been some "terrible examples" exhibited and published. But this is not the fault of the instrument but of the photographer. So many effective and convincing morceaux and masterpieces of art have been shown that were the product entirely of the soft-focus lens its reputation was long ago established and it should not require any defense. It will not, however, give knowledge of art to those who do not possess it, or skill where it has not been acquired.

I do not wish to convey the idea that every soft-focus lens will produce the best results. Some, while giving excellent quality in one direction destroys it all by defects in other respects. There may be delightful softness, roundness, etc., yet spoiled by excessive halo. There are some of these lenses, however, that are all that could be desired and that will meet every requirement.

I am using a lens made specially for me by Mr. Walter G. Wolfe, of Boston, Mass., the rear combination of which can be easily removed and another inserted in its place, having a little more or less correction and, possibly, other modifications. This enables the photographer to incorporate in his work his own ideas, tastes, emotions—himself, just as the painter is able to do with his different brushes. With an anastigmat one takes what one gets; with a

* Willard H. Wright. in Modern Painting.

lens such as is described above, one gets what one takes. This lens will fill every need for pictorial work, done straight; and everything can be secured in the negative, so far as the knowledge and skill of the pictorialist extends. The better the artist the more excellent the results, of course.

I do not believe one can get as good effects by taking a picture with an anastigmat and enlarging with a soft-focus lens. There will be very marked improvement, however. I should prefer to take them with the latter and enlarge them with the former. There are some shortcomings that cannot be corrected, if they are in the original negative. But why not do all straight with a partially corrected lens?

Many pictorialists use only hand cameras and enlarge; and they were not always able to obtain soft-focus lenses small or light enough. These are now supplied to meet this want and will replace the usual lenses in sizes five, and six and a half, inches focal length; and for reflexes from seven inches up, as desired.

At first some may find difficulty in focussing. But it does not take long to learn to use these lenses to the best advantage. They do not give quite the same result in the print as one sees on the ground glass. Some workers rack in or out a little to correct this. With some of these lenses, I am told, if focussed too far forward it increases the Others, again, if racked too far in or out will show the image lengthened or broadened slightly, and it is claimed this fact can be used to advantage, at times. Be all this as it may, one soon learns just what to do to get what one wants, and the soft-focus lens is no exception in requiring the user to become familiar with its peculiarities, as this is the case with any type of lens.

I would advise having a focussing scale made, and by the manufacturers of the lens owned, and using it to begin with; afterward one would best use one's eyes. It is preferable to focus with the stop it is intended to employ; and this should be the largest that will get the desired effect.

That well-known writer, critic and

artist, Mr. F. C. Tilney of London, in the last Empire Number of *The Amateur Photographer and Photography* states that he has observed great progress in artistic photography in the last five years. While the possession of more knowledge of art on the part of pictorialists will account for this to some extent, may not a good deal of it—may not most of it—be owing to the quality and other desirable features imparted by the increased use of the soft-focus lens by American and British photographers?

MAKING COLD PROCESS STRIPPING PAPER AND PLATES FOR DEVELOPING OR PRINTING-OUT BY HAND OR MACHINE

By ALFRED J. JARMAN

PART I

THE making of a photographic paper that may be used to print an image upon, and then enable anyone to transfer the image to some other surface, may not be entirely new. The method of production to be described is new, and may prove to be both useful and valuable both in manufacture and adoption. instance, some years ago, many beautiful portraits were produced by what was called the crystoleoum process, which consisted of causing an albumen print to adhere to either a flat or concave glass plate, and coloring the portrait from the back in oil color after the paper supporting the albumen image had been removed by carefully rubbing the paper away. The production of such portraits or pictures may now be made in a more simple manner, by the use of a stripping paper, that may be made to adhere to glass or metal in a cold state, or beautiful transparencies may be made direct upon glass plates that have been coated with the same emulsion that is used for making the stripping paper. A print may be made thereon, either by development or printing-out, with the certainty of always obtaining the right kind of photograph suited for coloring,

either in oil or water-color and finished so as to appear to be a painting in oilcolor, with a correct likeness of the person. The surface may be produced slightly roughened, so as to form a tooth, for the paint, made by a slightly rough-surface paper, so that upon strippint the tooth already remains, or it may be made smooth and a tooth of any kind given to the surface to suit the taste of the artist that does the coloring. How to produce these different surfaces will be fully described so as to be carried out in a thoroughly practical way. If a canvas backing would be the thing desired to suit those with a thoroughly artistic taste, this may also be accomplished, so that a perfect photographic likeness may be colored either from the back or front, or both, to suit the taste of the artist.

In the first place, suitable paper must be provided, with the kind of surface desired, or a smooth paper of a good quality, not too thin, because these thin papers cannot be handled with any degree of certainty when coated with emulsion by hand. It will be advisable not to have the paper with too coarse a grain, because this does not look nice for small work. Suitable paper for hand-coating may

be obtained from almost any artist's colorman in sheets that may be cut to

a suitable size for coating.

Pieces of paper eight and a half inches wide, and in any length from eighteen inches to two feet, may be used, and the back of each sheet marked slightly with lead-pencil so as to be able to see which is the face when the coating takes place. It will be necessary, however, to make two small wood troughs for holding the solution, so made that the center slopes so that a small quantity of solution or emulsion may be used with more economy than would be otherwise with a flat tray. The trough may be ten inches long and eight inches wide, inside measurements, one trough being coated thoroughly all over with two coatings of shellac varnish, the other being coated upon the *inside* only with two coatings of gelatin, the outside with varnish. The kind of tray is illustrated in Fig. 1, each tray being made alike in size. White wood, or willow, being well suited for the purpose.



FIG. 1.-WOODEN COATING TROUGH

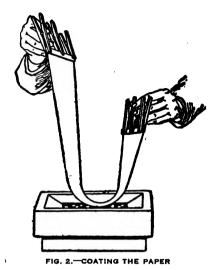
The best way to coat the interior of the trough with gelatin will be to make the gelatin to the consistency of thin glue, then pour this into the tray; lead this all around the top of the tray to the edges; then pour the excess off into a vessel so that it may be used again. As soon as the coating has become thoroughly surface set, fill the tray with a solution of formaldehyde, one ounce in sixteen of water. Coax the liquid around the top by means of a smooth flat camel-hair brush; treat it thus for five minutes, then pour off the solution; keep it in reserve for use again. Allow the gelatin surface so treated to become thoroughly dry, which will take about twelve hours; then treat it in like manner again, with a warm solution of gelatin, and

permit the trough to stand so that the gelatin will settle at the bottom. This will produce a beautiful finish, with the lower point well protected. The tray must now be filled again with the formaldehyde solution, and allowed to stand for about ten minutes, when the solution may be poured away and the tray stood aside to become thoroughly dry when it will be fit for use, to contain the waxing and other solutions that would act upon shellac varnish.

The First Coating of the Paper

Preparing the Gelatin Coating.—It will be necessary to prepare this coating from suitable gelatin, because the quality of gelatin varies so much that, without testing, it cannot be known how much chrome alum may be used without causing the gelatin to coagulate. The procuring of foreign-made gelatin being out of the question, we will use that kind which is made in the United States by the American Glue Company; the kind the writer has used and knows that it can be depended upon for the purpose in hand, as well as for emulsion making.

Dissolve the chrome alum in two ounces of water, bring this to a boil in a glass flask; then, when the gelatin has been melted in an earthen vessel, standing in a saucepan of boiling water, add the hot alum solution a few drops at a time, stirring well during this addi-The hot mixture must now be tion. strained through a folded piece of well-washed cheese-cloth, wetted and wrung nearly dry, into a stoneware pitcher or jar, then poured into the shellac varnished trough. The paper to be coated must be already clipped at each end with thin strips of wood with the flat-tipped photographic clips as shown in the illustration (Fig. 2), commencing at the lower end of the paper by curving it in shape like the letter J, then by raising one hand and lowering the other, the paper becomes coated



with a uniform covering of gelatin which becomes insoluble when dry. The method of coating the paper will be the same for every operation. It will be advisable to hang the sheets of paper in a cool, damp place before coating them, because if they are very dry air-bubbles will abound upon the surface, which cannot be got rid of. Do not attempt to coat the paper twice with the gelatin solution; one coating will be sufficient.

As soon as the paper has become quite dry it must be rolled up—gelatin face outward—and kept so rolled for some time, so as to take out any wrinkling that may occur.

The next operation will be to coat the gelatin surface with a waxing solution, which is composed as follows:

Waxing Solution

Yellow rosin		3 drams
Beeswax (genuine) .		1 dram
Spirits of turpentine		15 fl. oz.
Benzine		10 fl. oz.

The best way to make this mixture will be to melt the rosin and beeswax in a suitable vessel, such as a small enamelled iron saucepan. Remove this away from the source of heat and away from flame. Then pour the hot mixture into another vessel containing the turpentine and benzine, returning this to the vessel the wax and rosin

are melted in, then bottled and shaken well. When cold it will be ready to Having the sheets of paper now unrolled, lay one of them back down upon a clean flat surface; wet a piece of canton-flannel with the rosin mixture, and rub it all over the hard gelatin surface. Lay this sheet aside; treat another sheet in the same way; and so on until all the sheets have been treated. Now take the first sheet. which by this time has allowed the solvents to evaporate, fold a piece of canton-flannel into a pad, and rub this all over the surface until there is felt a sort of clinging action, when a third piece of canton-flannel must be used to polish the surface by very light rubbing. The sheet may now be suspended for the next operation, treating all the sheets of paper in the same manner. When this is done, do not handle the paper so that the fingers touch the surface, because these fingermarks will be sure to show in the finished picture. The paper must now be clipped to the strips of wood as in the first place, and suspended ready for the next coating, which consists of a very thin lacquer, in which the gelatincoated trough comes into use.

Either of these formulæ may be used, which form the final coating before the emulsion is put on.

Thin Lacquer Coating No. 1

Zapon lacquer							oz.
Zapon thinner	•		•		8	A.	oz.
	N	o. 2	;				
Amyl acetate collodion							oz.
Amyl acetate (concentrated)					14	fl.	oz.
	N	o. 3	}				
Plain collodion					2	fl.	oz.
Wood alcohol, or denatured				nt.	14	fl.	oz.
Castor oil	aic	OHO	1.		1	de	· 2 m2

Either of the above will answer the purpose. No. 1 is excellent, giving, as it does, a faint matt surface to the transferred image.

Coating the Resinized Paper

Pour the selected mixture into the trough coated with hardened gelatin,

and pass the paper over the surface in exactly the same way as in coating it with the gelatin; once is sufficient. Drain the excess liquid into the trough by allowing one of the lower corners to touch the side of the trough. Now reverse the paper, making the lower end to become the top, and suspend the paper to dry.

When this extremely thin coating of lacquer is dry, which requires but a short time, the strips of wood must be removed and the paper rolled again face outward. It will now be ready for coating with emulsion at any time.

Preparing Paper for Cold Stripping No. 2

This method of preparing paper for stripping will no doubt appeal to those desirous of making a small quantity for home use as being more simple and easily made. In either case the method of coating the paper by passing it over the surface of the liquids, so as to allow the paper to only touch the surface of the liquid and not to permit the running of the liquid over the back, is a knack that will soon be acquired by practice, although if a small quantity should run over the edges of the paper it will not spoil the paper. The only difficulty will be experienced when the time comes to strip the paper after the print is made. The part where the liquid has run over will require longer to dry, because the pores of the paper have been completely filled, thus preventing the underlying moisture from evaporating readily.

Make up the following solution so as

to be ready for use:

White wax cut into shreds. 1½ drams Sulphuric ether 2 drams 1½ fl. oz. Tetrachloride of carbon . 1½ fl. oz. Japanners' gold size . 2 drams

Allow the wax to soak for a short time with the ether, this will soften the wax like soft putty; then add the benzine. Shake the mixture well and add the tetrachloride of carbon and the gold size. By occasional shaking of the mixture the wax will become completely dissolved, when the preparation will be ready for use.

If the strips of paper to be coated are not required to be eight or nine inches wide, they may be four or five inches. In this case, strips of wood at the ends will not be required. The ends of the paper may be folded over for about three-eighths of an inch, thus forming a stiff top, which may be held by fingers, so as to keep the paper flat during the coating. The turned-over end also answering the purpose of suspending the paper after coating upon a stifly-drawn line of strong string to

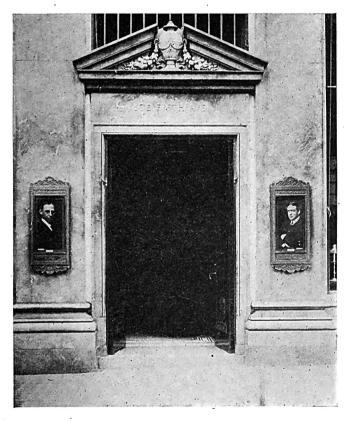
permit their drying.

Pour this mixture into the gelatincoated trough, and proceed to coat the surface in the same way as previously described. The coating may look a little uneven upon the surface. This will not prove detrimental. Suspend the sheet to dry away from dust. Of course, these sheets must be marked with a pencil upon the back, so as to note which side is to be coated. A soft lead-pencil is best, so that it will not impress the paper so that the indented mark will show upon the face to be coated. The drying of these sheets will require several hours before coating with emulsion, or they may be carefully rolled face outward when dried, and allowed to remain so, when they must be unrolled and rerolled in the opposite way before coating. This plan will cause the strips to lie flat, thus enabling them to be coated with the emulsion with ease.

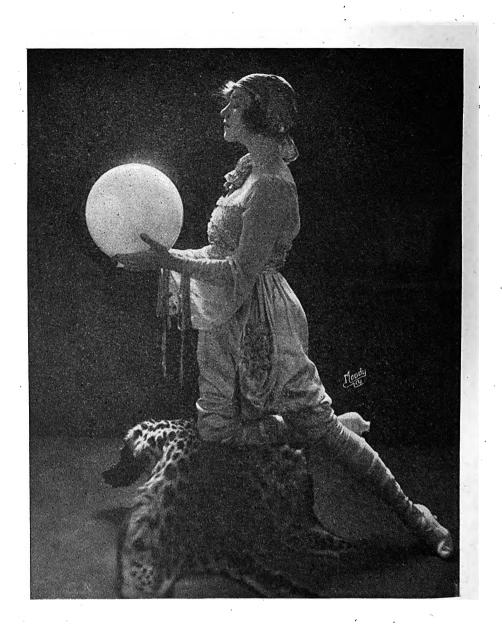
No other preparation is necessary before coating than that already described. The exact kind of paper best suited for the purpose can only be ascertained upon making a trial: Paper prepared according to the No. 1 method, and coated with a sensitive silver emulsion, will keep in good working condition for months. This has been proved both upon rough and smooth papers. Care must be taken to see that very common paper is not used, because of the many impurities contained therein, particularly the antichlor as it is termed, which consists of hyposulphite of soda used in papermaking to counteract the

bleach. Good ordinary drawing paper may be used, as well as others, not necessarily baryta-coated, but of good quality and texture. The preparation of the papers, both in gelatinizing and waxing, may be carried out in daylight, but the emulsion preparation and coating must be performed under a deep orange colored light, not necessarily ruby, because the emulsions used for the processes to be described are not as highly sensitive as the gelatino-bromide emulsions. The proportions of the waxing solution in the make-up is important, because if the solvents are in too great a quantity then the paper will not strip, while if the waxing ingredients are too much, then the emulsion film will pucker and lift in the process of development. In Part II the preparation of the sensitive emulsions will be described for contrast, medium and soft effects suited for both paper and plates for development, and the developer suited for the purpose.

(To be continued)



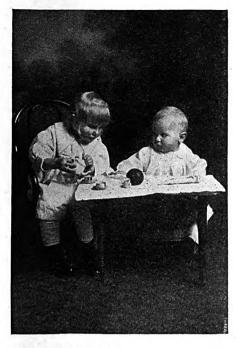
SHOWCASE OF PIRIE MACDONALD, FIFTH AVENUE, NEW YORK



A STUDY IN-LIGHTING BY MOODY STUDIO NEW YORK



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BY, M. S. FISHBACK

FISHBACK STUDIO, SALEM, OHIO

FOURTEEN POINTS ON COLOR

By A. VERNON GODBOLD

HOTOGRAPHERS in the near future-will have to interest themselves in the question of color, if they are not doing so, as it is such an important element in portraiture, and as regards handwork is practically the monopoly of professionals, and a line, if it is given due consideration, which will enhance the profits. There are plenty of middle-class people who can afford, and wish for, a truthful portrait in color if it can be done without a lot of fuss and bother to themselves. Workers of the future will be earning more money, and are already taking more pleasure in their homes, and will want portraits with an added charm.

Color has been called the sunshine of art, as it assists wonderfully in the expression of beauty, but unfortunately its use and application do not seem to be governed by laws, as in the case of composition and light and shade. If we turn to books on color they not only

demand a lot of time for study, but they are too theoretical to be easily understood, and it seems difficult for an artist to get help out of them in their present form, or to be able to refer to such books for a scheme of color for a particular The greatest difficulty in arranging a color design is the qualities and quantities of color entering into a scheme of harmony. These and several other points are not dealt with in books on color, for the simple reason that a number of fine specimens are required to display what cannot be given in words; therefore I should like to see a color theater or college established for displaying fine specimens, for lectures, latest results of color photography, color organ displays, and other items of interest to artists, designers, florists, etc. As it is, artists practically have to teach themselves by studying appearances and referring to acknowledged portrait masterpieces. Fortunately there are (457)

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plenty for our guidance, as color is the quality which has contributed to their

preservation.

"There is one quality of good color," to quote Professor Church, "which lies at the very root of all successful employment of vivid hues. consists in minute variations of hue and tone within the same surface. color must not be absolutely uniform, flat and monotonous unless it be very pale, very dull, or very dark, when the absence of this 'throbbing' or 'palpitating' quality, though undesirable, is less observed. We have before us as we write a fine old Chinese vase of turquoise crackle. Apart from the mosaic texture, resulting from innumerable fissures in the glaze, what a number of variation in appearance does this turquoise color offer! Where the color is thinnest it is paler and verges more upon green; where it is thickest it is at once deeper and more blue, and there are innumerable hues and tones. In painting similar effects may be produced by unequal glazings and scumblings of one hue upon another." What artists sometimes call "accidental" color, only got by mixing color on the palette—the airbrush is too mechanical to give it-an unconscious picking up and applying of tints gives this play and is, no doubt, what Whistler had in his mind when he explained "that it was impossible to produce the same masterpiece twice over-as difficult as for a hen to lay the same egg twice."

The influence of design on color can only be explained by showing the same pattern in various schemes of color. In making a complex color arrangement it is well to begin by planning first its leading parts, the additions will then be easier. The color of an object may be beautiful but much of that beauty may be lost or neutralized by its surroundings. Harmony of color must come not alone from the object we are planning, but also from the person who is to wear it. As an example, take a man's portrait dressed in black and seated, color it and make the background a rich blue, then show it to a critic, he will at once say: "Bad color, background comes too forward, looks cheap, the face appears leathery, etc." But you use the same blue on a lady's coat trimmed—collar, cuffs and flounce—with black velvet, and show it to the same critic; he will say, "Who's the lady?" which means he is interested, and it is pleasing.

If you have strong contrasts of color the contrasts of tone between them must be small. The Japanese often made the most successful use of violent contrasts of color by being careful that they should be the same tone value. And again, where you have strong contrasts of tone, such as Rembrandt was fond of, you cannot successfully have strong contrasts of color as well. Reynolds wished to paint a lady in a dress of gold silk with a blue background he made a compromise by making all the shadows of the dress and accessories a brown color to keep a harmony in his work. It will be found in nature that her general color scheme is divided into warm and cold colors. Harmony arises from the reflection of one color upon the adjoining, so as to produce a blending, interlacing of the various hues, producing a chain of connections between the extremes of hot and cold. The practise of this was the success of the Dutch school. The color of flesh indoors is cool in the lights and warm brown in the shadows. It is said Delacroix was so surprised to find, when his model put his head out of the window he was a different color: that flesh showed its true color in the open air with cool violet shadows. A portrait does not depend upon a number of little touches, but upon the big relation and differences of warm and cool colors simply employed. Whistler obtained his harmonies by employing tone and variations of a limited number of colors.

Photography is remarkable for the ease in which gradations of tone melt imperceptibly into each other without strokes, lines, dots, or scratches, therefore—as every material speaks its own language—it is not advisable to destroy by sloppy brushwork, its chief characteristic, but to maintain this and the high-class appearance of the paper that manufacturers strive to supply. Those who can admire bold brushwork over the exactness of a photograph can enjoy

a drum accompaniment to a mandolin. Students turn to books on painting for assistance, and get led astray about brushwork, which rightly belongs to oil and water-color sketching from nature. Why try to hide the photo base when experts can easily detect it?

Compare Gainsboro's thin painting, which is esteemed for beauty and freshness, to Hogarth's heavy, solid paint. Rembrandt's early work is smoothly painted and quite as vigorous as his late and much rougher style. The vigor of effect depends on truth of tone, of light and shade, not on thickness and

roughness of paint.

The colorist has definite colors for the face, dress, and hair, the background being left entirely to the artist's skill, and as so much depends on the importance of the color support, it is hoped the following will be helpful. As some sort of guidance to a student, it is pointed out that great masters very often made use of the small interval of color, like Velasquez's "King of Spain"—the coat is black and the background black. Holbein's "King Henry VIII."—the coat is light blue against a darker blue back-Leighton's "Moretta"—the ground. dress is apple green against an olive green. Millais' "Bubbles" is green velvet against olive brown. These are just a few thought of at random. It is impossible to give rules, but the general tendency is a complementary color behind the figure, and its contrasting color in front. In some of the old masters the background is gray, the coat black, and the waistcoat yellow. With ladies this is easier to arrange. If the background is greenish and the dress red, the contrast is by means of a string of blue beads. If a little of the color of interest is repeated in the background it links the parts together. The use of a contrasting color separates the subject from the background. If you are compelled to use contrasting colors which do not perfectly harmonize, a way out of the difficulty is to mix a little of each color with each other, say, a bright red dress and a full green background; take a little of the edge off the green with some of the red and carry a little of the green into the shadows of the dress. This method, with

other strong contrasts, should give an improvement.

Perfectly transparent colors are too powerful, sometimes look quite sickly, especially if yellow; therefore always use a little body color in your backgrounds to give atmosphere to keep them from coming forward, as it is unlawful to suffocate people. The most suitable colors are the neutral tints like gray, brown, delicate pink, olive, russet or citrine. These also go well with any mass of black. For vignetted backgrounds:

Blue gray shaded with brown.
Green shaded with burnt sienna.
Neutral tint shaded with yellow or

Olive green shaded with brown.

Flesh is best represented by simple tints nicely gradated and not broken up. A patchy juxtaposition of primary colors is all very well for small minatures, but is not suitable for coloring a photograph of medium size. If the color of the face is too brilliant it will lack refinement, and if beauty is lacking a nice quality of color will give it charm. When Reynolds, speaking of color, told his students to think of a peach, he meant the direct condition of flesh was peachbloom, surroundings cruder, and lips as compared with dry bricks to look like fruit; therefore, he very pithily described what he aimed at himself. Do not be afraid to color the ears with a little red to keep them back and force the nose forward; don't get them purple, as this will give them a frozen appearance. The eyes and mouth have the most color, then the cheeks; keep the color clean, avoid hot foxy color, leather color and fever color. Don't forget a soldier looks ridiculous with a lady's complexion. Coarse brushwork on the face always makes the flesh look like a sheet of crumpled note-Use a white enamel or china palette, so that the transparent and semitransparent tints can be better seen.

Now to a question of a little reform as a means of bringing about better results and a better reputation for colored photographs. One of Whistler's propositions was that a work of art should be "finished" from the

beginning. This is well understood by operators as regards B. and W., but color is always an afterthought, an afterwish by the patron, whereas good work can only be done by making it a forethought. It is suggested for studios to announce special sittings for color arrangements —no extra expense, merely the use of a panchromatic plate, some forethought and advice. Costly curtains and screens such as Royal Academy artists favor are not advocated. Procedure after this style: A lady takes advantage of the studio's announcement for a color sitting, and is dressed in blue; a background is let down, preferably of a panelled room; she is posed removing a plate of oranges from a table. That picture would lend itself to color.

The present method is something like this: A lady in furs wishes for a standing position, and is taken against a landscape that happens to be down. The picture is passable in B. and W., the lady likes the expression, an enlargement is ordered to be colored. The result unfortunate, because the color emphasizes the landscape.

A lady is taken in evening dress against a strong cloudy background. It looks very well in B. and W.—an order is given for one colored. The color of the clouds translated by the artist as a storm makes the lady look foolish.

Much can be done by painting in and painting out, but if a colored photograph is to show a nice clean, even finish and surface and general craftsmanship, it must be finished from the beginning. Ladies love a change of dress, whether it really suits them or not. It may happen a woman of forty, with sallow complexion, in a blue blouse, has a sitting, afterward asking for a colored enlargement. She gives the colors; her friends know that particular blouse is blue, and blue it's made. The result is cruel, because the blue intensifies her yellow face. If forethought was color and the artist is consulted he will probably discover by conversation that the lady had at home a more suitable dress of yellow-brown and a string of yellow beads—an easier picture to color with satisfaction all The same consideration should be for children; and how pleased parents

are if the child makes a picture, more so if color can be effectively applied.

Until the great need for the standardization of the terms describing the quality of colors is filled, and an accurate system of color notation is invented the artist must see the sitter. When this is brought about a great difference will be seen in the truth of color recorded; and if an artist is not on the premises the occasional artist should be in attendance by appointment. It used to be quite an event in olden times to have one's portrait recorded in color, and why not today?

A special fee will have to be charged to meet the time taken up, but the result will be worth it. The plain man in the street can see the difference between Bond Street work and the product of the "Whitechapel gentleman" when the two are together, although he does not know why. If Whistler had run a studio he would have announced:

Maker of Portraits, Projected Pictures: Symphonies in Silver-gray and Black, Harmonies in Golden Brown. Color Arrangements by Appointment. Silhouettes in Nocturne Tints.

And would have displayed his "projects" after the manner of high-class studios of today, displaying just one or two colored specimens as something choice, which is far more effective than the shops that crowd colored enlargements into their windows like the unloading sale of a picture factory.

Tinting vignettes in various colors in the same way as cream toning is done by the hypo-bath is suggested. Whistler selected colored papers for his pastels, not to avoid "fatiguing the paper," as he put it, but that a fine effect could be got by easy means. For instance, a few touches of scarlet on blue-green paper is a most striking harmony. the aim is to make an enlargement from a vignetted head and shoulders of Marshal Foch as an attraction for the The artist proceeds to make window. the print himself, to save time afterward, as few printers can make a soft vignette. Then by means of the hypo-bath he tints the paper or takes the print out of the bath and sponges it over with a dye of

soft blue gray, then leaves it to be washed and mounted in the usual way. The face is colored by the oil, wax or pastel method; the gold braid and army ribbons touched in. It will be seen by getting rid of the surrounding whiteness, which is so common, and adding a tint, the touches of color tell like jewels, and have quite a different appearance to the usual dust cloud raised by the airbrush. A girl in a green dress would have a green-gray ground tint similarly with other subjects.

Color will be wanted to liven the display and to give variety if the suggestion of local exhibitions for professionals is carried out—what Whistler would call "an heroic kick" to improve business, a stimulant to good work, a counter attack to the canvassing tout. With a couple of borrowed war photographs in color to help the attraction the public would remember for a long while where to go for good work. Photographers would meet as in the market-place, and other benefits would accrue.—B. J.

BACKGROUNDS

AN important consideration in the composition of a picture is the background, by which term is to be understood everything seen beyond the plane in which the figure is placed.

A background is an absolute necessity. There must be a setting to the subject. There must be something to relieve the figure to explain why it is there in the picture. In a word, to complete the composition.

There are some qualifications demanded of this helpful adjunct. In the first place, it should never be obtrusive. It must not attract more attention than its subordinate office may claim.

There should be no overlaying our picture with a multiplicity of details which adds nothing to the interest, challenging as much attention as the subject itself. Neither should the background be unmeaning or inappropriate, but rather blending with the main topic, like a well-adjusted musical accompaniment, supporting and assisting instead of distracting and annoying.

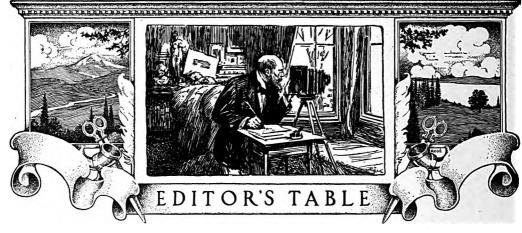
Though a background may be a troublesome and sometimes a dangerous companion to the figure subject, it is nevertheless capable of being made a most valuable ally; for though in general it should be negative and retiring in order to give due prominence and force to the subject, it often affords the photographer an opportunity of showing his originality by the introduction of

striking attractions or ingenious allusions as do many of the backgrounds of Teniers, Jan Steen, Ostade, and others of the Dutch and Flemish schools of painting.

Besides, the background may be of great technical service in giving vigor to parts of the portrait subject by relieving the figure against it, or softness and repose by losing in it unsightly but necessary features of the subject.

The Italian painters of the fifteenth century, especially the Venetian school, sought to relieve their figures when dressed in dark clothing by backgrounds lighter in tone, thus giving them a distinct and at the same time a natural appearance, the gradations in the background tones enveloping the figures in an atmosphere which made them stand out in relief.

Revnolds considered the strong relief as less desirable than breadth and fulness of effect, and hence his figures supported the strong shadows by still stronger darks of the background. In consequence of this method he frequently altered the relative tone of the picture, making a black coat, for instance, assume the appearance of a gray one by extreme depth of tone in a curtain or some other drapery. Many of our photographers have recourse to a like device, but not always with the consistency which prompted the great painters.



THE SURVIVAL OF THE FITTEST

MOTOGRAPHY as a profession has so suffered from being in a groove that it is probable it will never again become as fixed in style as it has been in the past. Then, photography did not know that it was shackled until times came when the shackles began to fret and gall. When photographers began to try new things the shackles began to loosen. It was not all plain sailing. When the albumen paper monopoly was broken there was much heartrending over beautiful prints returned; they had hopelessly yellowed. But among the chaos of fugitive papers answering to doubtful manipulations of toning and fixing was one sound product, and Artura has survived—a paper of permanency and of infinite possibilities for beautiful work. For years we heard pathetic stories of the superiority of the vanishing wet plate, a mere wail, we now know, of the man stuck in the hole of unprogressive ideas.

The cry of "old versus new" in styles of work has died from our ears. Those who understood themselves, in either camp, went their way and gave their customers good value. The non-understanding ones and the cranks found their respective levels. One of the results of the whole shaking up is that there is more resource and originality in photography now than ever before, and no falling off in honest technic.

The past is put behind us, and it behooves us to think of the present, into which the future is forever merg-The present of photography is good and the prospects stand fair. If ever a cloud comes over photography, and commercial prosperity ebbs and flows like a tide, the shadow will fall first on the man who is least alive and up to date. Nearly all the "leaders of photography" would weather a commercial gale, for they are men who have founded their business on sound, brainy work. What would happen to the smaller men. depends very much on what manner of men they are. The men who have grasped the possibilities of the present, the men who do good work, who know how to pose and print and trim and mount to suit the individual taste or whim of each customer, the men who understand the value of judicious advertising, these are the men who will defy a period of adversity.

CONCERNING SELECTION

THE whole art of photography can be described in one word—that word is selection. The greater the skill exercised in selection the more perfect the photograph. Not only is it necessary to pick out the most perfect or typical models, to choose the most satisfactory point of view, and the best angle of lighting, but when

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more than one exposure be made—and where is the photographer who is content with one exposure only?—selection of the best negative or print from its inferiors is imperative. Unfortunately, few have sufficient courage to carry this selection far enough, and the consequence is that, instead of a few first-rate pictures, many second and third rate in quality are sent out into the world.

Now that there are so many cameras astir, the need for very careful selection becomes every day more imperative, for no one now can be expected to be interested in anything which is not above the average, and a neglect of the practice of weeding out every negative which has not a new tale to tell will prevent the photographer from exercising to the best of his power the necessary selection of subject, etc., when out with the camera. Not only so, but the exhibition, if only among friends, of second-rate work, prevents the photographer from rising in the estimation of his brother photographers. We say his brother photographers, advisedly, for no one but a photographer knows or cares whether sun-pictures are good or bad; we have only to listen to the remarks of those who are not photographers about photographs to be convinced of the truth of this. Who are the giants among photographers? The men whose output is unlimited, who weary their friends with innumerable attempts, and who cannot find it in their heart to throw in the fire all which does not thoroughly satisfy their expectations? Hardly. The men whose work we are always most eager to see are those who exercise their skill in selection most heroically, who throw aside without hesitation all which they think is not up to the mark. "Stop!" says the student, "what bothers me is to know what to select and what to reject; and it is with the hope of gaining information that I show such a quantity of work." So far, so good; but the student may be asked if he always does what he can, be it ever so little, in weeding out, and if he always takes in good part the advice offered to him as to which to burn and which

to frame. We are afraid he does not. and the most wholesome lesson he can have, where he gets not only the benefit of the advice of one but the collective wisdom of many, too often raises only a feeling of resentment and a wish to kick everyone all round, instead of a feeling of thankfulness to those whose experience enables them to advise and point out the right way. We mean, of course, the immense benefit the young photographer derives from submitting his work to those exhibitions, where a selection is made, where quality and not quantity is the watchword. Yet against this healthy discipline some accuse their advisers of partiality, and they rush into print, saying how they had paid "fifty cents for postage, and had all returned." Here, again, we see the need for selection. Just imagine what a large number of framed photographs can be sent from one end of the country to the other for "fifty cents." The selecting bodies of our exhibitions are only human, after all, and when they have a hundredweight of stuff, all framed alike, it is only natural for them to say, "Oh, send that lot back to where it came from," and to ask the man who sent it to remember that if every exhibitor were to submit such a quantity we should have to sit here for six months instead of six days. Even the selection committees of our prominent exhibitions err, to our mind, in hesitating to refuse weak work, and even the best exhibition reminds us too much of the beach photographer, whose caravan is covered from stem to stern with, apparently, a print of every photograph he has ever taken. Of course, everyone's standard of taste is different, but when half a dozen photographers find it impossible to answer among themselves why certain prints have been thought worthy of being hung, the advisability of an explanatory note in the catalogue, giving the reasons why the print found favor in the eyes of the hangers and selectors might be advisable. When awards are made we venture to think that the judges should always point out the reason for their decision. The very fact that a certain

print pleases them should not be sufficient, but even if this rule were made imperative it might be the means of merely showing the ignorance of the

judges.

Out of doors, that is, in landscape work, the work of selection is often merely a question of waiting and watching, but with figure and portrait work the photographer can do more; he can pick and choose his models. It is said that one professional photographer even picks his sitters; at least, he refuses to take anyone whom he thinks will not do him credit. Not only can the photographer select his models, but he can, when he knows how, command

success by choosing the model's dresses and surroundings. Photographers too often leave to chance the accessories and dress of their figure studies; no wonder, then, that so many are imperfect.

To be able to exercise the faculty of selection in the most perfect degree, it is necessary that the photographer should have a high ideal. The beauty which is supposed to exist in the eye of the beholder should ever be trained to prefer the perfect to the imperfect. In most cases a sympathetic chord is struck when the photographer is in the presence of what is beautiful, and what we call selection is only a response from ourselves to that which struck us first.



BETWEEN US

EARN one new thing each day. If this plan is adhered to for one year your brain will have received and recorded three hundred and sixty-five new impressions.

It probably will not be given to you to learn a big truth each day, but the average will be well worth your while.

This is a good habit to acquire, as it is one that will grow upon you, and you will learn to seek out the more important things.

Suppose you but open the dictionary and learn the meaning of one new word, you have added that much to your vocabulary, and to your understand-

If you are passing a store window and see displayed some article with which you are unfamiliar, step into the store and ask what it is, and what it is for.

If someone with whom you are conversing makes use of an unusual word or

phrase, ask the meaning.

Do not be like the old woman of White Chapel, who threatened to sue a man for libel because he called her a "hypotenuse of a right-angled triangle."

Learn one new thing each day.—The Kodak Salesman.



PRACTICAL PAPERS ON STUDIO WORK AND METHODS

The Help Situation

EITHER the help situation with the photographers is going to be a very serious proposition or else many photographers are causing us a lot of trouble without cause. For the demand for help today seems to be greater than it has ever been before. Then again we believe there are many photographers who have a good position at present and who are applying for another position, just for the sake of changing and possibly getting a few more dollars per week. In many cases the cost of moving would be more than the increased pay which they will receive for a year or two to come. In other words, there seems to be discontent among photographic help.

It is only a few years ago when there was plenty of good help for the photographers, now there seems to be a scarcity which cannot be accounted for. We suppose one reason for this is the fact that there are so few young men learning the business and there are fewer photographers who are willing to teach young men than ever before. You ask them why they do not find a bright young man and teach him the business, and the reply is that as soon as he becomes acquainted with it and sees its possibilities he quits and goes into business for himself. This may be true, but this applies to every other line of business. And the person you take in and teach the business your way is worth more money to you than anyone else.

Photographers will find that about every time they change help they are compelled to pay more money than before, and we therefore advise them to pay more to their present help and keep them if they can.—Ohio Photo News.

The Personal Factor

If a photographer wishes for the best possible results from his business he must be able to do more than merely take photographs; he must sell them, and, further, he must, in the majority of cases, sell them before he takes them. Probably in no calling save that of a medical practitioner's does personality count for so much as in portrait photography. The doctor must in-

spire confidence by having a good "manner." If he is a little brusque, it does not materially affect the cure, but the expression evoked by the photographer is perpetuated in the portrait, and no amount of manipulative skill will destroy a glum or bored look. I have known several good, sound craftsmen who have struggled on for years, turning out excellent prints, but never making headway. The reason was almost identical in each case. One was more suited for an undertaker by temperament, though I am told that undertakers off duty are jovial souls. Another was apologetic in his demeanor toward his clients, while a third always gave the impression that he had been interrupted in some tremendously important work. All these failed to realize (or perhaps they were constitutionally unable to act up to it) that to be successful, the portraitist must be "all things to all men."

The standard of good manners is not the same in all localities, but it may be taken that it is always safe to treat even the humblest sitters as if they belonged to a much better class. They appreciate it, and applaud the judgment of the photographer, perhaps to the extent of increasing their order forthwith. If, on the other hand, really first-class people turn up, and in country districts the photographer meets with every grade, there should be no display of servility, no fussing round, with "my lord" or "my lady" interpolated in every sentence. Good manners should be backed up by a good appearance. The words which Shakespeare puts into the mouth of Polonius cannot be improved upon as advice to a business man: "Costly thy habit as thy purse can buy, yet not expressed in fancy, for the apparel oft proclaims the man." Let me hasten to explain that this does not mean a velvet jacket and a flowing tie. One must establish a cult before these can be indulged in nowadays, and even then I don't think that there is much money in it. The average sitter, whether citizen or Society lady, feels most confidence in a well-behaved man whom one might meet on 'Change or in the Park. Once this idea of personal neatness is adopted, it will naturally spread to its immediate environment,

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and an untidy studio or reception-room will become unthinkable. Our photographer, although possessed of a considerable amount of firmness, must yet be pliable as far as the wishes of his clients are concerned. Some men will be simply rude, perhaps, without knowing it when a customer makes what he considers an absurd suggestion. Such should be received as worthy of consideration, but difficult, if not impossible, of execution, and a very different impression will

A failing with many photographers is that of trying to please their customers by promising prints at an impossibly early date. This shows weakness of mind, and a desire to avoid immediate unpleasantness. If a photographer is honest, and tells a sitter that he can supply no more portraits for delivery (say) before Christmas, it does not follow that he will lose the order. As a matter of fact, a lady said to me, in such circumstances, "Well, if I went to someone else, they would probably promise, and not send them. I will sit now, and send them in the New Year." If I had promised and not supplied she would have had no opportunity of sending any other souvenir at Christmas, as she probably did.

Besides customers, most photographers have other folk whose goodwill has to be obtained and kept, and these are his assistants. If there is a thorough feeling of esprit de corps throughout an establishment, it means much not only in comfort of working, but in actual cash. Waste and delay are avoided, and if any special effort is needed, it will be made cheerfully. A well-trained staff does not want familiarity from the principal, but it appreciates consideration, and when there is a fitting oportunity a little generosity, either in the way of a cash bonus or an excursion or garden-party, not at the expense of the staff, but as a graceful act on the part of the one most interested.

Thus, what is wanted is a sedulous cultivation of the art of "getting on" with people, no matter in what way they are encountered. It is not easy to learn, but if the need is always kept in view, some measure of success is certain.—B. J.

Fitting-up the Retouching Desk

AUTUMN will soon be here, and when the clocks go back next month we shall realize it all at once, for it will be dark quite early, and retouchers will have to overhaul their arrangements for working by artificial light.

The makers of retouching desks seem to have paid little or no attention to this matter, with the result that retouchers themselves have to attend to it, as the desks are only arranged for daylight.

It is really an important matter, as it affects the eyesight of the retoucher considerably, a bad or badly arranged light soon compelling the use of glasses to ease the eyestrain, particularly where electric light is used.

A good oil lamp is usually considered the best artificial light to work by, but it is not always obtainable, and is also messy to clean and look after—both are items which waste the retoucher's valuable time. Moreover, retouchers usually seem to be expected to take the light provided and make the best of it, though this action on the

part of the employer is not wise, for an arrangement quite comfortable for one retoucher is quite the reverse for another. For this reason I am going to suggest an arrangement which I myself use and find quite comfortable.

It is, of course, necessary to be as economical with light as possible even this winter, and therefore where possible a lower-powered bulb or mantle may be used nearer to the working aperture by the means I shall describe. This consists of three or four slots, with glasses, etc., running in them and working right on the desk itself.

The slots can be made from strips of three-ply wood, Academy board, or Winsor and Newton's Birchmore board. The strips are cut about two inches wide, and say nine inches long—depending, of course, on the size of the desk-opening. First a wide strip is fitted, then two narrower ones, half an inch above the edge of the wide one, then another wide strip, and then two more narrow ones.

All these strips are laid upon each other in a pile, till the required number of slots are formed for the glasses to run in. These are then carefully nailed all together, the nails being hammered over at the points so that the whole is held quite firmly together.

Next take first a piece of opal, half or whole plate size, according to the size of the opening in the desk—I have found half-plate to be quite large enough myself—next a piece of ground glass, or, failing it, a clean half-plate glass matt varnished over and covered with a clean cover glass, "passe-partouted" to it lantern-slide fashion, to protect the varnished side.

Now fix and wash a couple of unexposed negatives of the required size, and before drying immerse for a minute or two in water colored to a faint bluey-green with a few drops of blue stain. Very little color is needed, but just make a pale glass, and then double the strength of the solution and make a more deeply stained one. These should then be dried, covered and bound as was the matt-varnished glass.

The strips forming the slots should now be nailed or screwed on to the back of the retouching desk, at such a distance apart that the various glasses can be pushed easily to and fro with a touch of the finger or by the use of cords.

When an electric bulb is used it can be hung on a flex, from a hook in the top back edge of the desk, a strip of wood with a V-shaped notch in the end screwed on the edge next the hook serving to hold the bulb out clear of the glasses, and yet near enough to save any waste of light. An inverted incandescent gas mantle can be used in the same way, but an upright one must be fixed to a stand or a high block of wood, to bring the light to the right height for comfort and convenience. For electric light I use the opal and one of the blue glasses together, the blue killing the yellowness of the light and making it approximately the same to work by as daylight—a soft steady light. For incandescent gas I find the ground glass and pale blue glass will answer well, being, of course, drawn over the opening in the desk against which the head to be retouched comes.

Even for daylight work I often find the ground-

glass a great convenience, where a very thin negative has to be retouched, making it easier to see the subtleties of half-tone and shadow, and all or any of the glasses can be instantly adjusted with one hand, without moving from one's seat and losing the focus of the eyes on the

negative.

A little swing shelf, fastened to the side of the table and supported by a steel rod, is also most useful to hold bottles, medium, etc., as it can easily be pushed out of the way, and the drawers fitted to most retouching desks are quite inadequate to hold bottles, and medium upset over the clothes has a tendency to ruin the clothes and cause much profanity. I also save the powdered lead from the retouching pencil, and find it makes an excellent stumping chalk, quite free from grit and of a good black.—G. E. H. G., in B. J.

As to Prices

WE cannot understand the attitude of some photographers who are still making pictures at a price that is way below actual cost of the same, including the overhead expenses and a good salary for themselves. Neither can we see at this time why any photographer should advertise a dozen sepia portraits and enlargement for \$2.50, but they are doing it.

No one need make any apologies for advancing their prices at the present time. Photographers in every city should talk with those who are trying to make photographs at the old price and

see if it isn't possible to get them to raise the same to a reasonable amount, considering the In fact, some photographers seem to be unwilling to be shown how to make a fair profit

in return for their services rendered.

It isn't the cheap man who is getting the large business at the present time. Possibly there was a time when prices had some effect upon the business, but not now. Customers who come into photograph galleries and who are getting a larger salary than ever before, or if they are in business for themselves have increased their prices, are not only surprised, but they cannot see how any photographer can continue to make pictures at his old price. Still there are photographers who will say that customers will not take their work, they will have to close their doors if they raise their prices.

The autumn and Christmas business is now coming. You can get a complete new line of folders and mounts for all sizes of work, if necessary you can burn up in the furnace all you have left and when you show this line you can increase your prices. You can well afford to burn up all the old folders you have in order to get your prices on the level where they should be. Money is made today upon quality and service and not on price.—Ohio Photo News.

The Baby

THE photographer, possibly more than any other business man, has reason to know that fond parents are never tired of seeing representations of their offspring. The amateur knows also, and suffers acutely from the voracious appetite for "snaps" of baby. The power of H. M. the baby to loose the purse strings is truly remarkable. But in this article we are not concerned so much with methods of exploiting the dear infant once it is in the studio as with a method for getting the little cherub there.

First Catch

In this connection it may be remarkable that, like the hare in the cookery book, baby must first be caught. Naturally baby must be caught young, the younger the better for our purpose, as will be seen. How to do it—that is the question. The plan sketched out below may be new to many readers, but its potentialities from the point of view of business are great.

A Systematic Record

Some most valuable information is presented free every day to the photographer who cares to look for it. It is fortunate for him that despite the age-long repetition of the occurrence there are still many thousands of parents who like to announce the circumstance of the advent of another "little stranger" by putting a notice in the Press. Any enterprising photographer who cares to make and conscientiously keep records of these announcements should be able to derive profit therefrom. The idea, in a nutshell, is to note the name and address, and in due course— when there is something a little more tangible than frills and bubbles to see-invite the proud parent to have the baby photographed. Somebody will have to photograph that baby—the thing is to see that at any rate you make a good bid for the business.

Looking Ahead

But the idea runs further than baby's first photograph, and the value of such a record will increase as time goes on. Suppose, for example, the reader has made the first photograph, during the course of which business he has, like a wise man, found out the child's Christian name. The record is amplified, and on the and so on. occasion of the first birthday a suggestion can be sent along that baby be photographed on the first birthday, and after the first on every birthday as it comes along, and while the sitter remains in the district. At first the interest of the parents should be strong enough to keep the habit alive. Later the young person's interest in him or her-self should help the photographer to establish the desire to preserve a record of looks at each birthday. Alfred Russell Wallace deplored the fact that people did not have themselves regularly photographed on their birthdays or at other stated times from infancy to age, as such a record, he said, would be of great value, besides providing interesting evidence of the moulding of feature and expression under the hand of

How to Do It

The reader who is unacquainted with modern devices for simplifying business may see visions of much work in the keeping of the records suggested. But it is really quite a simple matter. The thing may be done in a variety of ways, and each may do it as he chooses. But those who wish for advice may be recommended to try a simple card index. The size of the card may be 5 x 3, which is a standard size, and a singledrawer cabinet may be made or bought that will hold 1000 cards. First make twelve sets, each numbered 1 to 31 in the right-hand corners; these we may call daily cards. Then make twelve guide cards—i. e., cards with tabs projecting above the ordinary cards—and write the names of the months on these. Now put one set of numbered cards behind each month card. records can be made either on the numbered cards, or a separate card for each entry may be kept behind the numbered cards; and in addition to name and address, record made of invitations sent and business resulting. The record will, of sent and business resulting. The record will, of course, consist of name and address of parents (to be supplemented later by child's Christian name), and date of birth. Each separate card should have the month and date inscribed on the top right-hand corner. Here is a convenient way of doing it: 7819 means August 7, 1919. If that card is removed from the index, then it is easily replaced in its proper position by reference to the number on it.

Using the Records

It will be seen that the records may be used at once, and also year by year as the dates come round. The first attack would naturally be made within a few weeks of the record being made. Thereafter the thing would be worked by a scrutiny a week or two ahead of the dates, so that the invitation should reach the prospective sitter just as the birthday looms on the near horizon.

Avoiding Blunders

Care must, of course, be taken to prevent an invitation being sent that might reopen a wound caused by the death of the child. Births and deaths announcements must therefore be studied together, and a second index or record in a book, in alphabetical sequence of names, is necessary to enable the record to be struck out or removed in case of death or removal of the family. To make assurance doubly sure, judicious enquiry of the milkman, the baker, or other daily visitor to the house is recommended before the invitation is actually despatched. Or it may be sent by hand by an intelligent bearer, who will enquire before actually leaving the note. Reasonable care will prevent any unfortunate incidents of this sort.—B. J.

Selling Photographic Studios

What is a photographic studio worth? There are many studios offered for sale every month. The photographers offering them for sale apparently ask as high a price as they think they can possibly get and will sell for much less in many cases.

Is it not possible to have some standard price for studios? We know of studios that are now being offered for sale that have been running at a loss for the last two years. We mean by this that the parties running the same have not made as much money out of their studios as they could have made working for someone else.

could have made working for someone else.

A going concern, or a business that is paying a profit above all expenses, is worth more than one that is not paying even if the one has a better loaction than the other. The selling of a business is an entirely different matter than the selling of photographs. First, a careful inventory should be taken, and if possible the price of the entire outfit in the studio should be figured according to condition, age and present value. Next the books of the photographer should show his exact profit each year for several years past. When a business man is shown figures of this kind there is seldom any difference of opinion in regard to the price which should be paid. If the inventory shows the studio worth \$2000, and the proprietor has drawn a salary of \$30.00 per week, and at the end of the year it shows a profit above his salary and all other expenses of \$1000, it will not be very difficult for him to find a customer for his studio and find one immediately.

A complete set of books will show the prospective buyer the exact condition of the studio and it is a big asset when you come to sell the

If there could be some understanding regarding the value of a studio—that is, the inventory plus one, two or three years' profit—and every studio should be sold on the same basis, photographers who are making profit would have no difficulty in disposing of their studios at once.

On the other hand, if no profit is made, then

On the other hand, if no profit is made, then the price should be the inventory less the loss for one, two or three years, and whoever buys this kind of a studio simply takes the chance of building up a business, and in this case he should not pay anything for the location or goodwill.— Ohio Photo News.



Development Papers

R. Chaboseau gives a summary of the development of papers which, while not containing much that is novel, may be useful. For rich contrasty prints he recommends the following developer:

Warm distilled water			1000 c.c.
Sodium sulphite dry			75 gm.
Hydroquinone .			20 gm.
Potassium bromide .			5 gm.
Potassium carbonate			50 gm.
Sodium carbonate dry			25 gm.
Discolve in the above of	·-da	•	•

The image will appear in from thirty to sixty seconds and development be complete in from three to five minutes.

For soft results with delicate half-tones use:

Warm distilled water		.1000.0 c.c.
Metol		4.5 gm.
Sodium sulphite dry		22.5 gm.
Potassium carbonate		22.0 gm.
Potassium bromide		1.0 gm.

The image appears very quickly and rapidly gains density.

An excellent developer can be made by mixing the above two solutions in equal quantities.

The above developers are particularly suitable for bromide papers; for gaslight or developing papers the following is advised:

Warm distilled water	1000.0 c.c.
Metol	2.0 mg.
Sodium sulphite, dry	22.5 gm.
Hydroquinone	6.0 gm.
Sodium carbonate, dry	60.0 gm.

For use mix one part of above with one or two

parts of water.

There is always a possibility of slight development action taking place in the fixing bath [which frequently takes the form of a yellow or pinkish stain.—E. J. W.], and to prevent this the following bath is suggested:

Water						1000 c.c.
Hypo						500 gm.
Sodium	bisu	ılph	ite,	dry		50 gm.

For use dilute with 8 to 10 parts of water. The author points out that freshly precipitated and washed silver chloride when added to a dilute solution of hypo forms a double hyposulphite of soda and silver, that is insoluble in water and only soluble in excess of hypo. The chlorides of sodium and ammonia added to this solution do not produce any precipitate; sodium and ammonium bromides added to excess give a yellow precipitate readily soluble; potassium chloride gives a white precipitate, which is also easily soluble; the bromides of potassium, lithium, zinc and cadmium give a precipitate which is white at first, but which turns yellow on heating, and which is readily soluble in hypo; on

the other hand, the iodides of sodium and potassium give at once a yellow precipitate which only dissolves with extreme difficulty in hypo.

M. Chaboseau suggests that these results may be useful in the manufacture of emulsions, but also that they have some bearing on the fixation of prints, during which operation the bath becomes loaded with alkaline bromides which tend to prevent complete solution of the silver salts.—Phot. Rev., 1919, p. 94.

Sugar as a Restrainer

J. MALDINEY points out that the addition of sugar to a developer slows development down without altering the character of the image, till with a content of 60 gm. to 100 c.c. of developer the duration of development is five minutes. Very careful experiments with test-tubes and an emulsion containing phenolphthalin, which, as is well known, turns red in the presence of an alkali, proved conclusively that the restraining or slowing action on the developer is entirely due to the increased viscosity of the developer.—Compt. Rend., 1915, p. 73.

of the developer.—Compt. Rend., 1915, p. 73. [Abney proved, in 1897, that the addition of sugar, glycerin, etc., to a developer slowed the rate of density increase merely by the increase in viscosity and the consequent slower diffusion into the gelatin film. Baekeland also, in 1900, proved the same point with Velox paper. It must be recognized that this slowing down of development is purely a physical action and is in no way comparable to the chemical action of restrainers of the type of bromides and chlorides.—E. J. W.]

Chlorochromates for Intensification

Lumière & Sevewetz have proposed the use of chlorochromates for intensification. These salts are prepared by evaporating a strong solution of a bichromate with hydrochloric acid, when the following chemical reaction is supposed to take place:

$$M_2Cr_2O_7 + 2HCl = 2\ CrO_3MCl + H_2O$$
 in which M stands for the metal. The ammonium salt is the most satisfactory and in a 3 per cent. solution for negatives and 2 per cent. for prints. The image bleaches, as silver chromite and chloride are first formed:

MCrO₃Cl + 2Ag = CrO₃MAg + AgCl, and this white image is darkened by the application of a re-developer, such as sodium sulphite, and the process may be repeated at least six times, with an increase each time of intensification and of chromium in the finished image, the silver remaining constant throughout.—B. J.,

1919, p. 451.
[This is practically, as the authors point out, a modification of Eder's and Piper and Carnegie's method of intensifying with bichromate and

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The ammonium salt can be hydrochloric. easily prepared by dissolving 100 gm. of ammonium dichromate by the aid of heat in 25 c.c. of distilled water, adding 150 c.c. of pure hydrochloric, and then evaporating until a very thick syrup is obtained. On diluting with water to 5633 c.c., a 3 per cent. solution will be obtained. —Е. J. Ŵ.]

High Temperature Development

MESSRS. AGNEW, RENWICK & ILFORD, Ltd., have recently taken out an English patent (128,337—1918) for the use of a preliminary hardening bath for use with plates. The bath consists of

	Formalin, 40 per cent Sodium sulphate (crystals)	:	1 oz. 2 oz.
or	Disodium orthophosphate . Water to	:	1 oz. 10 oz.

Paraformaldehyd may be used instead of formalin, 50 grains of the former replacing the above quantity of formalin.

The inventors point out that plates and papers treated with this solution may be treated subsequently with solutions (developing, toning, etc.), at as high a temperature as 110° F., without any troubles, and that this preliminary bath is preferable to adding the hardening agents to the developer.—B. J., 1919, p. 460.

[The use of preliminary bath of formalin dates back to 1907 at least, and the use of sulphates;

phosphates, chromates, etc., almost as long, but the inventors must be given the credit for the combination of the two as a preliminary bath. Disodium orthophosphate is the sodium phos-

phate, *U. S. P.*—E. J. W.]

Extinguishing Celluloid Fires

An interesting report from the chemical laboratory of the Massachusetts District Police has just been published, which describes in detail the attempts to extinguish burning motion-picture films by various fire extinguishers.

Carbon tetrachloride, which is sold under various fancy names, had no effect; in fact, the report states, "After four extinguishers were emptied the fire burned with increasing force." The soda and acid extinguishers were equally Film and kindling saturated with gasoline were ignited and a fire foam extinguisher played on the same, with the result that the gasoline fire was put out but the films still kept on blazing.—Journal of Industrial and Engineering Chemistry, 1919, p. 893.
[The well-known inflammability of celluloid

films has long been a serious menace; but of recent years the extreme care exercised in every projecting booth and improved type of projectors, both machine and human, have considerably reduced the occurrence of fires. Smothering the burning films with damp sand seems to

be the only real remedy.—E. J. W.]

Metol-Adurol Developer

					-		
THE following	for	mu	la i	s r	eco	mmended	by
Hauff:							
Water						1 liter	
Metol						8 gm.	
Adurol .						50 gm.	
Sodium sulpl	hite	(cr	ysta	als)		300 gm.	
Potassium ca				·		250 gm.	
Potassium b						1 gm.	

For rapid development (two to three minutes) this developer is to be diluted with 5 parts and for slow development with 10 to 15 parts of

Palladium Paper

Good results can be obtained with the following formula:

Normal ferric oxalate solution, according	
to v. Hübl	100 c.c.
Lead oxalate	0.8 gm.
Monobasic ammonium phosphate	2.5 gm.

• •	
II Potassium chloropalla-	
dite solution	10 per cent.

			H	-	
Sodium	chl	orop	lati	nat	e
solutio	n				. 10 per cent.
For a 50 x	60	cm.	she	et	mix:
Solution	I				8 c.c.
"	II				7 c.c.
. "	Ш				10 to 15 drops

Metol-Hydroquinone Developer without Alkali

Such a developer is recommended for the development of overexposed plates and in the photography of subjects having very strong contrasts. Good results were obtained with Lumière's solution:

Water							600.0 c.c.
Metol							1.5 gm.
Hydroq							0.7 gm.
Sodium	sul	phit	e (d	rys	tals	(30.0 gm.

If the negatives are too thin develop further in the following solution:

Water							300.0 c.c.
Metol Hydrog	uinc	me	•	•	•	•	3.5 gm. 1.5 gm.
Sodium	sul	hit	e (d	crys	tals	(40.0 gm.

PHOTOGRAPHERS in large towns should make of their studio roofs at least once a year. The soot which is deposited during the winter reduces the amount of light admitted to a considerable extent. Indeed, the cleaning of the glass at this time of the year often has the effect of halving the exposures. It is sometimes argued that the exposures are as a diffuser. times argued that the grime acts as a diffuser, but it is obviously an advantage to have plenty of light and, if necessary, to cut it down by means of diffusing screens inside the studio. Professional Photographer.





VIEWS AND Reviews



The New England Convention

THE New England Convention, held at Springfield, September 8 to 11, was largely attended, and one of the most successful in recent years. We regret that it is too late to give a full report in this issue of the JOURNAL, and will have to be deferred until next month's issue.

The British Photographic Research Association

A REPORT by the director of research, Dr. R. E. Slade, states that a wide program of research has been drawn up and preliminary experiments have been made on a large number of the subjects mentioned in the program. The history of photographic science and industrial development shows that, since the publication in 1891 of the researches of Hurter and Driffield, practically no new methods of attacking the problems of photography have been introduced. Many workers have improved and worked out further details of the old-established methods, and very considerable advances have been made, but the time now seems ripe for entirely new methods of photographic research. The association is using all the means at its disposal to initiate such new methods, and is making progress in this direction.

Some experiments have been made on gelatin, which though not suitable for publication will be of great use in future work. Progress has been made in investigation of photographic emulsions and a communication on this subject will be available shortly. Success has been attained in staining wood black or gray right through. This black wood, which was made in Germany before the war, is used by manufacturers of cameras and optical instruments, and the gray wood is used for picture frames and furniture. The process, for which an application for a patent has been filed, should be quite suitable for use on a large hled, should be quite suitable for use on a large scale and quite economical. Two communications from the laboratory have already been published ("Contrast and Exposure in X-ray Photographs through Screens," by R. E. Slade, and "The Fundamental Law for the True Photographic Rendering of Contrast," by A. W. Poster and R. F. Slade), and it is intended to Porter and R. E. Slade), and it is intended to publish without delay any results of research which are of general interest and not of immediate use for application to specific problems of the photographic industry.

The Missouri Valley Convention

The Kansas City convention of the Missouri Valley Photographers' Association, held July 7-10, 1919, was another of the season's successful sectional meetings. The attendance was considerably over six hundred. The sessions were

enthusiastically attended and the program was interesting in all its details. The newly elected officers are: President, Henry Moore, Kansas City, Mo.; Vice-President, L. C. Hodge, Topeka, Kans.; Treasurer, Miss Jeanette Bauman, St. Joseph, Mo.; Secretary, C. J. Fennell, Columbia, Neb.

Corrosion in Lenses

IF lens users would acquire a little elementary knowledge concerning the nature and properties of glass, their instruments would stand a much better chance of keeping in good condition than they do at present. It should be known that what we call "optical" glass is made in a great variety of qualities, each of which is capable of taking its place in one or other of the many kinds of lenses. Some are as hard and impermeable as the glass we use for windows and tableware, while others are soft enough to be easily scratched or even dented, while injudicious polishing will quickly dim the exquisite surface upon the per-fection of which so much depends. This is especially the case in some of the earlier anastigmats in which very soft and easily corroded glasses were used because others were not available. It is perhaps news to many people to learn that some glasses are so susceptible to damp that a single drop of water left upon the surface for a few hours will leave an ineradicable mark, while the presence of a film of condensed moisture will give rise to a general corrosion, which in mild cases shows in prismatic colors like those of a soap-bubble, and in severe ones as a yellow stain accompanied by a distinct depolishing of the surface. Unfortunately, there is no cure for this evil, for even the maker of the lens cannot repolish it to the same accuracy of figure that it originally possessed. Forewarned is forearmed, and knowing what is likely to occur the prudent man does not allow his lenses to stand about exposed to the atmosphere, but keeps them in tightly closed cases when they are not actually in use. Failing a case, which also protects the brasswork, a well fitting cap at the back as well as the front is an excellent protection.—B. J.

Mr. George L. Barrows With the Sagamore Chemical Co., of New York

MR. GEORGE L. BARROWS, well known in the photographic field as former American agent for "Agfa" products, announces his intention of going into the manufacture of these former imported products as well as handling imported goods of special merit. His new company will be known as the Sagamore Chemical Co., Inc., of 120-122 W. 31st Street, New York. We advise our readers to get in touch with Mr. Barrows to supply their photographic wants.

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Photographic Records

WHILE the camera and a photographer have become a part of the equipment of many shops, we are not as yet utilizing them to their capacity. They are too often confined to making photographs of completed machines for publicity purposes when there are many other uses where

they would prove most valuable.

During the war nearly every machine-building shop was very active in the Liberty Loan campaigns, as well as the Red Cross and other drives. Attractive decorations were used in many cases, and much time and effort were spent to make these campaigns fully successful. Yet for the most part, the only records of these activities now in existence are in the memories of those who participated in them, making it impossible to comply with a governmental request for such photographs to be used in showing the activities of the machine-tool industry in the

Memory plays us so many tricks that photographs of even commonplace things are often found valuable in later years. Even general photographs of various shop departments either at stated intervals or after each alteration or rearrangement of machinery, may readily bring out that which otherwise escapes attention and perhaps prevent changes which would simply be a return to conditions found unsatisfactory.

Interesting machine set-ups, unusual tool fixtures and gauges, photographs of machine failures and similar subjects are all likely to

prove of value as time goes on.

These and similar photographs are particularly valuable in organizations having a publication which reaches the employees of the Photographs can also be made extremely useful as an aid in instructing workers either in the shop or training school.—American Machinist.

Articles in Leading Periodicals

"The Low Visibility Phase of Protective Coloration." By Loyd A. Jones.

Jour. Franklin Institute, September, 1919, p. 363.

"Night Photography." By Robt. Dykes, F.R.C.S.

Brit. Jour. Photog., August 22, 1919, p. 484. "Photo-micrography without a Microscope."

By G. Aidaseer.

Brit. Jour. Photog., August 22, 1919, p. 483.

"The Commercial Photographer." By L. G. Rose.

Bulletin of Photography, August, 1919. "New Studies of the Mechanism of Composition." By Sadakichi Hartmann.

Portrait, August, 1919. "A Method of Multiple Gum-Printing."

C. MacNamara.

Brit. Jour. Photog., 1919, p. 320.

"Radiation Detection in X-ray Work." By R. E. Slade.

Chemical Engineering, June, 1919, p. 131. "Aërial Cameras." By F. C. V. Laws.

"Aërial Cameras." By F. C. V. Laws.

Photographic Journal, 1919, p. 192.

"The Design of Lenses for Aërial Photography." By C. W. Frederick.

Jour. Optical Soc., January-March, 1919, p. 34.

"The Evolution of Aërial Cameras during the War." By C. M. Williamson.

Brit. Jour. Photog., 1919, p. 309.

"Comparative Notes on Methods of Making Enlarged Negatives."

Brit. Jour. Photog., August 29, 1919, p. 498.

"Progress in the Field of Chemical and Technical Photography." By R. Namias.

Il Progresso Fotografico, 1919, p. 125.

"Economy in Fixing."

Brit. Jour. Photog., 1919, p. 405.



BY H. L. RICH, BROOKLYN, N. Y. WON HALLDORSON FLASHLIGHT CUP AT CEDAR POINT, 1919

A New White Water-color Paint

So many photographers have use for a good white fluid in marking showcards, negatives, albums, etc., that we are glad to bring to their attention so high a quality product as "Snow-white Water-color," for marking or for opaque use. "Snow-white" is a standard fluid, flows readily from the pen or air-brush, does not peel or crack and is thoroughly reliable. We have given it a good test in this office and we know of no better white fluid on the market.



The WORKROOM

ONTAINING THE LATEST PROCESSES, FORMULAE AND APPLIANCES NEEDFUL IN THE ART OF PHOTOGRAPHY FOR THE OPERATOR & WORKER

Replacing a Focussing Screen Printing on Wood for Engraving Workroom Hints Economy in Fixing Flare Spots and How to Detect Them Suggestions on the Use of Light Filters Violet-Brown Tones on Gaslight Papers A Chemical Ink for Titling Negatives Waterproof Ink for Writing on Bottles, Etc. While-You-Wait Photography Photographs on Watch-dials Photographic Chemicals in Switzerland Transferotype Papers for Portraits How to Build an Electric Cabinet Intensifying Portrait Negatives How to Prepare Photographic Solutions Multiple Vignettes with Print-out Papers Photographing Small Objects Adjusting Loose Gelatins in Negative The Kallitype Print Photographic Materials and Processes Patent News



THE WORKROOM

By the Head Operator



Replacing a Focussing Screen

I suppose that most of us have at one time or another had the mortifying experience of smashing a focussing screen. At the best, this is most annoying; but when it happens far from the studio, with an urgent job to be done, it becomes a positive disaster. However, things are rarely so bad as they seem, and a little ingenuity will usually find a way of repairing the damage. So, perhaps, a brief review of the means at our disposal for replacing a breakage may prove of interest. We will divide the subject into three sections:

A. The provision of a permanent screen.

B. The provision of a temporary glass screen.
C. The provision of a substitute when glass

is not available.

To take section A first. The provision of a permanent screen may be necessary either to replace a breakage, or to improve on an existing screen, and certainly many screens in regular use are open to great improvement in the matters of fineness of grain and translucency. Unless one has compared two screens under similar conditions, it is almost impossible to realize the added ease in working given by a

really fine screen.

A very satisfactory screen may be prepared by grinding two glasses together with knife powder. The powder must be slightly damp, and it will then be found to grind very slowly, but with a beautifully fine grain. Emery powder is often recommended for this process, but there is the danger of getting a coarse grade, and, although it is certainly quicker to "bite" the glass, I do not think that the result is so good. Personally, I have found nothing so good as "Wellington" knife polish. Incidentally, it should be mentioned that there is no good in trying to "rush" the grinding process, as the usual result is a smashed glass.

Glass may be given a very fine matt surface by etching it with an acid, but it is hardly the job for anyone but an expert to undertake. This is the method by which 'most of the finest com-

mercial screens are prepared.

When an exceptionally fine screen is required, it is best to give up the idea of matting the glass itself; the best way is to use a fine-grain dry plate (unexposed, of course), and give it a slight "red fog." This may be done by developing it, in the dark-room, of course, in a ferrous citrate developer to which ammonia has been added in sufficient quantity to make it slightly alkaline. This gives a beautiful screen, which is unbeatable for any delicate work. As ferrous citrate has gone out of use, and the average man has not time to make up new solutions, it may be as well to give another way of getting a somewhat (474)

similar result. Slightly light-fog a plate; for instance, expose a slow plate for five seconds at 20 feet from a burning match, and then develop fully in any non-staining developer. To get the best results by this process it is essential that development should be full, so the exposure must be adjusted to give the correct density. If a large screen is wanted it will be found best to use a smaller plate of the same brand to experiment on, as, at first, it is difficult to judge the required exposure.

A very fine, but somewhat delicate surface for focussing may be got by flowing on to glass a mixture of: white wax (‡ oz.) in ether (1 oz.) in the proportions indicated. This dries quickly, and gives quite a good surface; but, unless protected by a varnish, it is very liable to

mechanical injury.

We will now pass on to section B. Temporary screens may be prepared in dozens of ways, but one of the best is by applying ordinary matt varnish to glass, or, if matt varnish is not at hand, ordinary negative varnish may be used. It should be mixed with about an equal quantity of water, in order to get a matt effect.

These give quite satisfactory screens, but often varnish is not at hand; anything that will leave a thin film on the surface of glass may be used. For instance, flour paste, and photographic mountant may be smeared over the glass, or putty or Plasticine may be daubed on to it. The trouble with these make-shifts is to get a fine grain; but, with care, a decent surface may be prepared.

Quite a good screen can be made by soaking a sheet of tracing paper in glycerin, or even, at a pinch, in water, and squeegeeing it on to glass. This is rather a messy process, and it must, of course, be used before the paper becomes dry; but while it is wet it is remarkably efficient.

In cases of great urgency, an unexposed dry plate may be used as a screen without any preparation, but even the thinnest emulsion stops so much light that focussing is very difficult. Still, it is often a quick way out of an awkward position. Also I have focussed on a negative fitted into the screen frame, but this is a last recent and is not to be recommended.

resort, and is not to be recommended.

Now, our last section. When a screen must be made and no glass is at hand, it is a bad case, and it is impossible to make a really satisfactory substitute. But there is no need to give up in despair. Any translucent substance may be used; paper is often useful, the more transparent, but, at the same time, the more stiff the paper is, the better; or any fabric—a white handkerchief, for example, may be used. But whenever such a material is used, don't try and fit it in where the glass would fit, it is bound to wrinkle if you do. Either pin or stick it over

the back of the frame and make the necessary allowance for the difference in position after focussing is finished. The best way to fix either paper or fabric to the screen frame is to dampen it slightly, and stick it around the edges with Seccotine. It will then dry up tightly stretched.

But, after all, prevention is so obviously better than cure in the case of a broken screen, that a few hints may be useful. Never let your screen become loose in the frame; small wedges of cork or rubber will fix it securely. If anything goes wrong with the catches on the reversing back, it should be seen to at once. Always protect your screen with a sheet of stout card when the camera is in its case, and when space permits, wrap your camera in the focussing cloth. A solid leather case is an expensive item in these days, but the added protection to the apparatus makes it a good investment.—A. G. Willis, in B. J.

Printing on Wood for Engraving

To those who are interested in the above process, the following formulæ may prove of service for obtaining photographs direct from the negative on to wood. It must be borne in mind that the negative must be made through a prism or with a mirror in order that when it is printed the image is laterally reversed.

In using the following formulæ it is advisable to brush the sides of the wood block with melted paraffin wax or with celluloid varnish, otherwise there is a danger of the wood warping through

contact with water.

Formula I

Make a 5 per cent. silver nitrate solution, also a saturated solution of potassium oxalate. Add the oxalate solution to the nitrate solution until precipitation is complete. Filter to obtain pre-cipitate, which can be used at once or allowed to dry, taking care not to expose it to strong light. Next mix together equal quantities of a 5 per cent. gelatin solution, and a 10 per cent. solution of dextrine, and take a small quantity of this mixture together with a few grains of flake white and sufficient of the above precipitate to form a paste when rubbed on the wood with the finger. The paste should not be too thin. Finally brush the paste over the wood with a flat camel-hair brush to obtain an even coating, and allow it to dry in the dark. The amount of exposure required depends upon the negative and source of light. Using an enclosed arc lamp (6 amps., 200 volt) the exposure for a negative of average density at a distance of 15 inches from the light would be about 5 mins. After exposure, without preliminary washing, fix in a 10 per cent, solution of ammonia (.880), by holding face down for one minute, wash for one minute under a gentle stream of water, and put by to dry. It is advisable to keep the finished print from strong light until it is ready to work upon.

Formula II

Prepare the following solutions:

	A	
Silver nitrate .	15 gr.	1 gm.
Citric acid .	15 gr.	1 gm.
Water (distilled)	240 min.	15 c.c.

]	3	
Sodium chloride .	3 gr.	0.2 gm.
Potassium bromide	6 gr.	0.4 gm.
Citric acid	15 gr.	1 gm.
Gelatin	10 gr.	0.7 gm.
Water (distilled) .	240 min.	15 c.c.

Mix the above solutions, filter and rub a sufficient quantity of the precipitate to form a smooth paste on the wood surface, brushing with a flat brush to obtain an even coating, afterward allowing to dry in the dark. Should the precipitate be dry it may be worked into a paste by adding a few drops of a 5 per cent. solution of gelatin. The exposure with this formula is approximately the same as with Formula I. Fix in a 10 per cent, solution of ammonia (.880), holding face down for one minute, wash under a gentle stream of water, and allow to dry, when it is ready for the engraver.

Formula III

In this formula use is made of the "blue printing" process with slight modifications. Make up the following solutions separately, then mix them and keep in a dark place.

A

Ferric	ar	nmo	nia	citi	ate		
(gree							60 gm.
Water			•			9 oz.	250 c.c.

В

Potassium ferricyanide 1½ oz. 45 gm. Water 9 oz. 250 c.c.

Pour a small quantity of gelatin and dextrin mixture, prepared as in Formula I, on the wood and add sufficient flake white to form a thin white paste. Cout the surface evenly by means of a flat brush, and when thoroughly dry flow over two or three times with the combined A and B solution. Expose until a faint image is visible. With an enclosed arc lamp (6 amps., 200 volt) this will take about three minutes at 18 inches from the light for a negative of average density. Develop by dipping the block face down in a dish of clean cold water. The image may be brightened by immersing in a 1 per cent. solution of nitric acid. After allowing to dry naturally it is ready for use.

With each of the above formulæ it will be found that a contrasty negative will give the best result.—B. J.

Workroom Hints

I HAD the good fortune to be present at a lecture demonstration by Mr. V. Jobling on the always interesting topic of practical hints, time-and-trouble-savers for dark-room, and other hints, tips and dodges. I wish I could retail them all to my readers and show the many little homemade and simple contrivances. But space permits mention of but a few of them in brevissimo. (1) Waterproofing the workroom bench. Scatter over it a few shreds of paraffin

wax and then work this into the wood with a warm laundry iron—not too hot. Alternately cover the table with linoleum or its equivalent and fix with copper or brass tacks. (2) Let the dark-room lamp stand on a small empty box set on its side, holding the lamp about a foot above table level. The open box then gives a safe place in which to set the gives a safe place in which to put the develop-ing dish—well out of the direct light. (3) Arrange a recessed tin holder to carry a watch just under the lamp for timing development.
(4) Keep a store of well boiled water in clean wine bottles-to be used for diluting the developer, etc., as required. It is thus already at the temperature of the workroom. (5) A convenient pouring bottle is easily made by inserting into the cork a couple of tubes (small bore, glass, of course) one longer than the other. When the bottle is inverted water flows from when the bottle is inverted water nows from one glass tube and air passes into the bottle by the other. (6) Duplicate weights of large denomination (1, 2, 4 oz.) can be made by utilizing small squat bottles filled with shot, etc. (7) Drying rack for small plates. Take a piece of wood blind rod, etc., and say a foot long. Plane enough off one side to make the a piece of wood blind rod, etc., and say a toot long. Plane enough off one side to make the thing sit steady and not inclined to roll about on the table. Make a number of saw cuts quarter way through and across the length ways of the stick. Plates may be held in a vertical plane by resting one corner in the saw cut and the corresponding corner on the table, preferably on a sheet of blotting paper. If the plates are put right and left of the stick they get more airway and dry more evenly the plates are put light and left of the stick they get more airway and dry more evenly and quicker. (8) Holder for card, etc., in the vertical plane. By the very simple expedi-ent of screwing a bulldog clip to a block of wood the trick is done. This comes in very handy for copying. A couple of small clips of the same kind are just the thing needed to hold a lantern slide and cover-glass together while applying the strip paper binders. (9) Focussing plate. A piece of fine mesh net enclosed between two clean glasses is excellent in focussing for enlarging lantern, slide making, etc. An opaque strip down the center of the plate and exactly an inch wide, at once enables one to read off on a foot rule the degree of enlargement or magnification. (10) For dry mounting, a billiard table iron was highly commended. (11) Talking of slide-making brings us to another excellent tip, viz., using two L-shaped masking papers in preference to the four-strip or ready-cut method. By mak-ing a right-angled template and bulldog clip to grasp half a dozen thicknesses of black paper, and using a sharp penknife, a number of these L-shaped pieces can be expeditiously cut. The width of the two parts of the L may conveniently vary, and by a little forethought they can be cut with next to no waste of paper. (12) For dry mounting with a flat iron in place of the customary short of rice is in heattern. of the customary sheet of zinc, it is better to use one or two sheets of typewriting paper. This random dozen or so notes by no means exhausts the evening's list, but may serve to show that at every stage of our normal pro-cedure one may think out or pick up hints all along the line.

Economy in Fixing

THE price of hypo is still many times that of pre-war times, and various expedients for economizing in its use have been suggested. There is one, however, that most people seem to have overlooked, and that is not to pour it down the sink needlessly. We are all apt to work our fixing baths pretty well to the finish, but a good deal of the hypo is wasted before it has done much work. The way in which this occurs is a very simple one—it consists merely of carrying over an excess of the solu-tion into the first washing water. If we watch the ordinary operator we shall find him lifting his negatives and prints in one movement from the hypo to the washing tank or tray, the hypo running in a stream the while. This is especially the case with bromide prints and enlargements, which are often lifted in a mass-carrying with them a large quantity of the fixer. If these were lifted separately and drawn over the edge of the dish little would be carried over, and the first washing would be more effective. The loss is often not noticed because the bulk of the fixing-bath is kept up by the water which is carried into it by the prints and plates after the developer has been rinsed off. That this is so can be proved by the disappearance of the developing solution. If a man uses up 40 ounces of developer in a day and does not rinse his prints, and many do not, it must have gone somewhere, and there is nowhere for it to go but into the hypo. A fixing-bath with 40 ounces of its bulk abstracted and replaced by developer is certainly not in proper condition, and it is not to be wondered at that the whites of prints "found" in it discolor sooner or later — R "fixed" in it discolor sooner or later.—B. J.

Flare Spots and How to Detect Them

MANY a photographer in buying a lens examines it critically for definition right up to the corners of the plate, and beyond if it is to be used with a rising front, but he does not think of testing it to see if it has a flare spot. He may note that there is no sign of such a defect when the lens is used on the usual trial subject; but it would be a very bad lens indeed if it showed one then. Consequently, when he comes to use it on the type of subject which will show a flare spot if one exists, he finds that his lens is suffering from it, although he may have used the instrument for years without suspecting its latent weakness. To ascertain if one is present, the lens should be focussed on a lighted lamp in a room otherwise dark, or on some small window forming an intense high-light. The ground glass is then critically examined, the camera being twisted about the while, to see if, when the image of the light is in one corner of the screen, there is a ghost image of it anywhere else. The experiment may be tried with the lamp at different distances, focussing for each; but it is not fair to the lens to have it very near, say, within three or four yards, since flare is not altogether unavoidable, and one which was only noticed in such circumstances as that would be a good rather than a bad feature, since it has been

arranged to become visible only in the circum-stances in which it would be least likely to do any harm.—Photography and Focus.

Suggestions on the Use of Light Filters

SELF-SCREEN or non-filter plates, in which the emulsion itself has been dyed so as to form a color screen of weak intensity, have done away with the necessity for separate light filters, except when a fairly complete correction is required. In these plates the screening effect is as complete as it can be made consistently with the plates being left fast enough for the ordinary purposes of photography, which phrase includes the average of handcamera work. If a more thorough correction is needed, it can be got with the help of a separate light filter, which can be used either with the self-screen or with the ordinary type of orthochromatic plate; but in such a case the exposure is sure to be so prolonged as to put the use of a shutter out of the question, unless the subject is a very exceptional one. That being so, it is well, in getting a separate color screen, to get one of a fair depth of color. There is now little or no need for so pale a light filter as one which increases the exposure only two or three times, since we have that, or almost that, in the self-screen plate, without the complication of a separate screen.

Six to ten times is the most useful screen for all-round work on orthochromatic as distinct from panchromatic plates. With panchromat-ics, all the correction that is needed can be got with a screen which does not prolong the exposure more than about five times at the most; some of the screens made with the dye known as "Filter Yellow K" do it with less. With orthochromatic plates, however, the same kind of screen calls for more exposure than this, and so we get the six to ten times just mentioned as being the most serviceable depth.-

Photography.

Violet-brown Tones on Gaslight Papers by Means of the Sulphide Toning Bath

SEVERAL gaslight papers yield violet-brown tones in the sulphide bath, similar to P. O. papers in the gold bath. Potassium oxalate yields fine tones if added to the bleaching or the sulphide bath. Sedlaczek recommends the following formula in *Phot. Chronik*:

Water	120
Potassium ferricyanide	3
Potassium bromide, 10 per cent.	150
Potassium oxalate. 10 per cent	300

After bleaching, the prints are washed and developed in:

Sodium sulphide, 1 per cent. . Potassium thiocyanate, 1 per cent. 30 -Lux, February 15, 1918, p. 78.

A Chemical Ink for Titling Negatives

THE following weights will make up sufficient for private use:

				A			
Sugar . Water							62 gr.
	٠	•	•	•	•	•	⅓ oz.
Glycerin	•	•	•	٠	•		3½ drams

Acid mercurous nitrate 37 gr. Mercuric chloride 20 gr.

Mix equal parts of A and B for use. No preparation of the negative is necessary.

Waterproof Ink for Writing on Bottles, Etc.

A WATERPROOF ink, says Gut Licht, may be prepared for writing on glass, labelling botborax is dissolved in 4 ounces of water, and borax of white shellac is then added, the mixture being heated until the shellac is dissolved. After the cooking, the solution is filtered through muslin to free it from sediment, and sufficient lamp-black or Indian ink is then added to make it quite black when used with a pen or fine brush on the bottles.

While-You-Wait Photography

THE usual method of procedure in this class of work is as follows: Four exposures are made upon a plate $6\frac{1}{2} \times 2\frac{3}{8}$. The negatives are developed in an M. Q. solution, and fixed as usual. From the hypo bath the plate is taken and rinsed by shaking in a dish of water, then a shaking rinse in Hypono, another in water, another in sat. sol. of alum, and a final one in water. Next the film is dabbed surface-dry with a damp leather, finally polished with the palm of the hand, and the back wiped dry and clean. Then the negative is placed film downward in the carrier of enlarging lantern, fixed up against the wall in a vertical position. Adjustment as to centering, etc., is quickly made, and the necessary three or six postcards exposed without a hitch. Sometimes single cards are used, sometimes strips of three or six. After development and fixing the cards get a hurried rush through water, followed (sometimes) by a bath of Hypono, and a final rush (not a wash) through water. They are then bundled in a heap on a piece of sheeting and well pressed with a roller squeegee, or laid out on blotting-paper and squeegeed, and are ready for delivery. Time for the four sets forty minutes or thereabouts.

The cameras sold for this class of work are well made and strong, a 4-inch anastigmat at

at f/5.6 being a very useful lens.

The lights used may be gas or electric. The clientele are usually rather a rough sort, and, as a rule, are far more interested in getting the result of sitting at the time promised—viz., in an hour—than they are of the quality.—W. Wilkinson.

Photographs on Watch-dials

A NEGATIVE is taken of the subject in the usual way, and a positive transparency on glass made from it. The part of the film con-taining the subject is cut all round so that it is separated from the remainder while in situ

on the plate, and the whole plate is then immersed in a strengthening and hardening solution. Such solution may be:

100 parts Formaldehyd (40 per cent.) 8 parts Carbonate of soda crystals. 7 parts 1 part Glycerin .

After, say, ten to fifteen minutes, the plate is taken out and immersed in the second solution which effects the loosening of the film. This may be:

Water 100 parts Hydrochloric acid (conc.) . 5 parts

When about one minute has elapsed and the plate is withdrawn, the portion of the film required may be freely peeled off, and may be immersed in an agglutinant bath, say, of gum arabic, and the photograph then applied to the dial.

It will be found that the film will curl and contract round the edges of the surface under treatment and draw tight that portion bearing the image on the front of the dial. The picture may be tinted afterward in the usual manner.

Photographic Chemicals in Switzerland

THE Swiss Society of Chemical Industry in Basle is about to place on the market a number of photographic chemicals of its own manufac-ture. In addition to "metagol," diamidophenol "Ciba," and ready-made developers, such as metagol-hydroquinone and a metagol-glycerinparamidophenol, are also to be marketed. The last-named and also a new paramidophenol-hydroquinone mixture will be sold in a highly concentrated form to be diluted 10 to 40 times before use. The company is also manufacturing fixing salts and a dry plate, the latter to be marked "Ciba."—(Z. angew. Chem., May 16, 1919.)

Transferotype Papers for Portraits

THE public are always ready to pay for anything which is new and striking, more especially if it happens at the same time to be pleasing and attractive. Professionals know that this applies with special force to portraiture, and for that reason they are always eager to find new processes and new methods to enable them to present their work in a way which distinguishes it from the general run of photography and raises it a cut above the "usual thing."

Transferotype paper provides the photographer with almost unlimited means of producing new and pleasing effects, such as are not to be obtained in any other way. Por-traits in black, in brown, and in sepia, and upon papers both white and cream, are always to be had. But Transferotype extends this scale almost indefinitely. It covers the whole range of high-grade drawing papers with all manners of delicate tints and varying surfaces from smooth matt up to coarse canvas grain. A

Transferotype print, for instance, on Japanese Vellum or Gray Michallet—to mention only two supports-looks more beautiful and distinctive than anything which is seen in the general run of showcases or windows.

Anyone who can make a good bromide print can make an equally good Transferotype print: the technic of the process is perfectly easy and

Transferotype is just an ordinary glossy bromide paper. It has one important feature, however, which makes it different from all other bromide papers; that is, it has a substratum of soluble gelatin underneath the sensitive emulsion. This allows the prints to be transferred to some other support. If it is not desired to transfer them, they can of course be used as ordinary glossy bromide prints.

The paper is exposed either by contact or by enlargement; but, as the portrait is to be transferred face-down to another support, the finished picture is, naturally, reversed as regards right and left if ordinary contact print-ing is used. In this respect it is like single transfer carbon, and for that reason the print should be made by some projection method, either enlarged or same size, with the glass side of the negative toward the lens.

The exposed prints are developed by the usual bromide paper developer, but as the transfer depends upon the gelatin substratum remaining in its original soluble condition, it is obvious that no hardening process must be used. The fixing-bath must, therefore, contain no hardening element. Plain hypo may be used, but an acid fixing-bath is better. A suitable formula is:

1 lb. Potassium (or sodium) metabisulphite (or sodium bisulphite) . . 1 oz. . up to 80 oz.

After fixing, the prints are washed and dried in the usual way. They may be toned by any suitable process, but it is obvious that they must not be subjected to the hypo-alum bath. The necessary hardening would make the substratum insoluble, and if the hardening were omitted both substratum and gelatin would melt in the hot bath.

Should any friction marks become visible, they can easily be removed by rubbing the dried prints, before toning, with a pad of cotton-wool dipped in water and wrung out.

It will be seen that, so far, the operations are just in the ordinary routine of the printing room. The rest is merely the preparing of suitable supports and the transferring of the

Single transfer papers, such as are used for the carbon process, are suitable. Most of them may be used without any preparation, although those of a rough or spongy nature should have at least another coating of gelatin. On the other hand, the photographer may very well prepare his own supports, and express his individuality by availing himself of the wide choice of high-class drawing or cataloguecover papers.



Any paper strong enough to stand warm water and a little handling may be used; but obviously nothing will be gained by selecting a support which closely resembles any of the ordinary bromide papers. Suitable papers—to mention only a few—are Cartridge (white and tinted), Whatman's Not Pressed, Japanese Vellum, Michallet (in white and a range of tints), Allongé and Ingrés. It may be stated, however, that very rough papers are difficult and uncertain, because the silver bromide image is not of sufficient thickness to be forced down into the hollows of the paper grain, and there is thus a tendency for shiny specks to be produced. The most charming supports are, probably, Japanese Vellum and Michallet.

All these papers must be coated with a film of insoluble gelatin in order that the image may adhere when transferred from its original support. One ounce of photographic gelatin is soaked in 25 ounces of water, a suitable vessel being a jam jar. When the gelatin has become limp, the jar is stood in a saucepan of hot water which is further heated until the gelatin is melted. A little carbolic acid—just sufficient for the smell to be perceptible—is then added as a preservative. This will keep for about a fortnight, and will stand several meltings, but eventually it decomposes and will not set on cooling and must then be dis-

carded.

To coat home-made transfer papers the gelatin is melted by standing the pot in hot water, and it is applied by means of a flat varnish brush of substantial size with bristles about two inches long. A smooth board or bench is covered with clean paper, or blotting paper, and the drawing paper is pinned down on this by its top corners. The brush is dipped into the warm gelatin, squeezed lightly against the edge of the pot, and the paper is coated with a series of rapid and firm sweeps of the brush, each overlapping the other, first lengthwise, then crosswise, ignoring streaks. When the paper is completely covered, the coating is evened up by going over the whole surface, first one way and then the other, with the brush held quite upright and only gently touching the paper with the ends of the bristles.

The paper is then pinned up to dry, and if necessary one, two, or three further coatings are applied. The last stage in the preparation of the supports is to make the gelatin coating insoluble, which is done by soaking the coated sheets for five to ten minutes, in a 2.5 per cent. solution of chrome alum or in a 2 per cent. solution of aluminum chloride. The former has a tendency to stain some papers—especially those of a cream tint. This disadvantage does not exist with aluminum chloride, but this chemical is more difficult to obtain. The coated papers should be washed for ten minutes after hardening. When dried they are

ready for use.

It may further be remarked that in the printed instructions a coating formula is given containing chrome alum, but the proportion depends to a certain extent upon the nature of the gelatin, and, in addition, the gelatin cannot be remelted when it has once set, so that the

method of coating first—with one or more coatings as may be necessary—and hardening afterward is recommended. The gelatin can usually be seen by looking along the surface, but to prevent any mistake it is well to make a pencil-mark on the other side before coating.

The nature of the paper determines the number of coatings required: those of a smooth or hard surface answering perfectly with one, while those of a porous texture require at least three. To particularize:

Japanese Vellum . One coating Cartridge . . . Two or three Whatman . . Three or four Ingrés . . . Three Michallet . . . Three

To make the finished pictures the trimmed prints and the paper supports are soaked in water for a few minutes till limp, withdrawn in couples, face to face, and squeegeed together with some force. If a roller squeegee is used, it is well to place a sheet of damp blotting paper over the print, but with the flat form thin rubber cloth is better. A thick sheet of plate glass makes a convenient squeegee board and if of sufficient size and weight, will serve for pressure afterward. The squeegeed prints are stacked up in a pile, with a blotter over each, a weight placed on top and kept under pressure for thirty to forty-five minutes for opal and smooth papers, and sixty minutes for papers with rougher surfaces.

Rough papers require slightly different treatment. They should be immersed in hot water and allowed to remain till the water is quite cold, the prints then being soaked for a few minutes and squeegeed.

After the necessary adhesion of print and support has been secured by sufficient length of pressure, the original paper support is removed by immersing each print separately in warm water, about 110° to 120° F. In sixty to ninety seconds the soluble gelatin substratum will have softened, and the corner of the paper may be lifted with a pin and the whole pulled away quite easily. If the corner cannot be lifted, it indicates that a higher temperature is required. The warm water is laved over the print for a few seconds to remove the soluble gelatin still clinging to the surface. The print is then allowed to cool, transferred to an alum or formalin bath—not too strong—to harden, washed for a few minutes and dried.—Professional Photographer.

How to Build an Electric Cabinet

CUT your strips of 1 x 1½ inches of poplar or such lumber. Make two frames; back frame about 60 x 60 inches—front frame 60 x 70 inches. Take these two frames and make the skeleton or box frame; size, bottom 20 inches; top 30 inches deep. Then add 6 inches from the back inside of the box, one strip from side to side at the top sides and bottom. One strip low enough to miss the two top lights. On the strip place one globe—then another strip as the other above so as to allow two lamps, making 5-1000 watts each, white Mazda lamps: thus two lamps

at the top, one in center, two at the bottom. Use

judgment in dividing space.

The cabinet is now ready to be mounted, make a double stand (one frame inside of the other) the inside frame holds the cabinet so arranged that it can be lowered or raised, or you can make it stationary. Work top lights on one switch, middle light on single switch, lower lights on one switch. Allow all the air possible on the bottom, back and sides of the cabinet, without allowing direct light on the sitter and background.

For beautiful effects use two sheets of drawing canvas fastened properly, don't cover the whole front, leave opening at the top in front 6 inches high. Second sheet run one foot from top. Take a piece of good stiff board. Screw on top of cabinet, let project forward 12 inches. Paint

white.

For groups and standing figures additional lamp on the ceiling comes in well—study your wants.

Stage cable No. 6 must be used from wall to cabinet. Any reliable electric supply house will be pleased to assist you. Some photographers don't like to do it.—Association News.

Intensifying Portrait Negatives

Intensification is a process which is now, thanks to a better understanding of the principles of development, not so extensively practised as it was in the earlier days of gelatin plates. when thin images were common, and a large proportion of negatives required strengthening. Still, there are occasions when intensification is absolutely necessary, and others when it is beneficial if done in moderation. In many photographers' minds there is some confusion of ideas as to when intensification is necessary, and negatives which would have yielded a decent print if left alone have been absolutely ruined by the treatment. I will take as an example the portrait of a man in dark clothes, where the exposure has been insufficient and the development prolonged until the face and hands are of fair printing density, but the clothes remain too thin to give any detail in the print. If such a negative be intensified we shall find that the detail in the clothing is certainly improved, but the face and hands have become so dense that the finer gradations are buried, and so much longer printing is necessary that the value of the increased density in the clothing is lost, such negatives better results may be obtained by treatment with matt varnish or papier mineral, on which the clothing may be strengthened with black lead, than by a general treatment of the entire image. It is even better to use a softprinting paper without faking the negative at all than to increase the contrasts, which are already too violent, by intensification. Flat, foggy negatives are also disappointing when intensified in the ordinary way, as the fog is also thickened, so that we get a dense film which is slow to print, and shows little improvement in contrast. If I have such to deal with I usually give them a dip in strong ferricyanide and hypo so as almost to clear the shadows before intensifying, after which the image appears nearly equal to an originally good one.

There are two preliminaries to successful intensification: thorough fixing, and equally thorough washing. If a negative is not properly fixed, we shall find various stains and patches occur during intensification; while if the washing is insufficient, we shall usually find yellow patches, arising from precipitation of the mercury salt used for bleaching. An exception to this is found when mercuric iodide is used, as only a few minutes' washing is needed for this method.

Mercurial intensification is the most popular treatment in most studios, because it is simple, and if properly carried out is fairly permanent. Unfortunately, this is seldom done, as ammonia is commonly used for blackening, and when this is done it is only a question of months before the negatives turn yellow and lose much of their

printing value.

The most general method of using mercuric chloride, or, more popularly, bichloride of mercury, is to make a saturated solution by placing an ounce or more in a twenty-ounce bottle, filling with tepid water, and shaking for a few minutes. A considerable proportion of the crystals will remain undissolved, but this does not matter, as they will dissolve when more water is added to make up the bulk as the solu-tion is used up. The solution may be returned to the bottle after use and allowed to settle. I am always careful only to decant off the clear solution for use, and I am never troubled with pinholes in the negative, which plague some workers. A stronger solution may be made by adding an equal weight of common salt or chloride of ammonium when dissolving the mercury, but I have not found this to be necessary. The negative should be immersed in the mercury solution until it is evenly bleached on both sides, the dish being rocked as in development, or "ripple" marks will appear. After bleaching, the negative must be washed for at least half an hour in running water, or, if this is not available, in frequent changes. I have in the latter case found it useful to put a little common salt in one of the changes, as this increases the solubility of the mercury. After washing, the bleached image must be blackened, and there are several solutions which may be used for this purpose. The most usual and least desirable is a 3 to 5 per cent. solution of liquid ammonia. This gives great density, but has a tendency to block up detail in the lights, and is not permanent.

Another and better way is to re-develop in an ordinary amidol or ferrous oxalate developer. Whichever is used, the blackening must be thorough, but in the case of ammonia not allowed to continue after the highest lights have blackened, or a reduction in density will commence, ammonia having a solvent effect upon the image. A few minutes' washing is needed after blackening, and care should be taken that "tear-drops" do not form on the surface, or they will cause irremovable markings when dry.

A better way of employing mercury is to use it in the form of iodide. The solution is a little more trouble to make, but much simpler to use; moreover, any desired degrees of density may be obtained, as the action may be stopped at any stage, and the thinner parts strengthened without blocking the high-lights. Another useful

10 oz.

feature is its applicability to local intensification, as it may be applied with a brush or pad of cotton-wool where needed. It is made as follows:

Mercuric chloride Water (Mix this in a 20-			175 gr. 10 oz.
Potassium iodide	В		1 oz.

Water

Add about two-thirds of B to the 10 ozs. of A, and shake well. There will be a copious red pre-Now add more of B, a few drops at a time, until the precipitate is redissolved. The mixed solution may be used repeatedly until it becomes too slow in action. For portrait work it is generally desirable to dilute the solution made as above with a equal bulk of water.

The negative is washed for four or five minutes after fixing, and then immersed in the mercury solution; it becomes rather lighter in color, but When the desired indoes not quite bleach. tensity has been attained the negative is washed until the back of the plate shows an orange color. This is removed by a short immersion in a 1 per cent. solution of hypo, after which it is thoroughly washed. If the density is too great it may be reduced to any extent by immersion in a plain 20 per cent. hypo bath. Greater density may be attained by substituting an ordinary amidol developer for the hypo bath used to remove the orange color.

The value of this developer to the portraitist is obvious. Where only one negative of a sitting has to be intensified, it can be done five minutes after fixation is complete, so that the negative can go into the washing tank with the others belonging to the same order. Another good point is that the image, although strengthened, Another good retains its transparency, and keeps a good color for retouching. The mercury solution keeps well, and when partly exhausted is excellent where only a slight increase of density is required. I may say that in my hands neither the mercuric iodide dissolved in sulphite, as recommended by Lumière, nor the tabloid form have worked so well as the solution made according to the above

I will now deal with a non-mercurial intensifier which possesses many advantages, not the least being absolute permanence. Its only drawback is that it is a "two-step" method, so that its action cannot be governed in the same way as the mercuric iodide. The original formulæ of the inventor, Mr. Welborne Piper, will be found in the B. J. Almanac, but as the quantities given are for one ounce only, I give a method of mixing which will be found more convenient in everyday work. Two stock solutions are made, one being potassium bichromate 1 oz., water 10 ozs.; the other, hydrochloric acid (pure, not spirits of salts) 1 oz., water 9 ozs. To make the bleacher for ordinary portrait work, take one part of bichromate solution and three parts of water, and add to each ounce 1 dram of the diluted hydrochloric acid. The negative, which needs only slight washing after fixation, is immersed in the solution until bleached (which

should occur in about a minute), and is then well washed until the transparent parts are free from the yellow stain. It is re-developed in amidol or metol-hydroquinone until thoroughly blackened. It is desirable to re-develop in diffused daylight, although this is not absolutely necessary with amidol. If the first application does not give sufficient density the whole process may be repeated, but I have never found this necessary with portrait negatives. The color given is a fine neutral black, and there is no appearance of intensification on the surface. In this it differs from the mercury and ammonia, which leaves a rough surface.

It is very desirable that all intensified negatives, especially those treated with mercury, should be varnished, to prevent their tarnishing by exposure to the atmosphere, and, in the case of platinum printing, action on the paper. If it be inconvenient to varnish, retouching medium may be rubbed all over the surface. This not may be rubbed all over the surface. only serves as a protection, but prevents a mark showing at the edge of the medium, which is almost certain to appear on mercury and ammonia plates.

There are several other intensifiers in ordinary use, but I have not dealt with these, as I have not found them so suitable for our special purpose as those described above. The mercuric bromide, and silver cyanide method is an excellent one for very thin and flat negatives. but it is apt to give too much contrast for portrait work, and pure 98 per cent. cyanide is not a desirable chemical for ordinary use. The uranium intensifier has its uses, as it will bring very thin images up to good printing density, but as the image is of an orange color it is almost impossible to judge of the value of any retouching upon it .-

How to Prepare Photographic Solutions

How to Mix Fixing Solutions

FIXING baths may be divided into the following classes:

1. Plain hypo solutions.

2. Acid hypo solutions consisting of hypo, with the addition of sodium bisulphite, potassium metabisulphite, or sodium sulphite with acid.

3. Acid hardening hypo solutions.

1. No difficulty is usually experienced when mixing a plain hypo solution. When mixing a quantity of solution in a tank the filter-bag method should be used and the hypo dissolved in warm water, because the temperature drops considerably while the hypo is dissolving. If a scum forms on the surface of the solution on standing this should be removed by drawing the edge of a towel across the surface.

If a wooden cover is used for the tank, fungi often develop in a hypo solution and produce acid substances which tend to turn the solution milky. In such a case the tank should be thoroughly cleaned, and the cover faced with sheet

A plain fixing bath, however, is seldom used, because it gradually becomes alkaline from an accumulation of alkali carried over by prints and plates from the developer, and this tends to

soften the gelatin while the image continues to develop in the fixing-bath, so that if two prints stick together more development takes place at the point of contact, causing uneven development. If the bath is acid, the acid kills or neutralizes the alkali in the developer carried

over, thus preventing unevenness.

2. In order to be able to mix an acid-fixingbath intelligently it is necessary to understand a

little about the chemistry of the acid-fixing-bath. Hypo can be made by boiling together sodium sulphite and flowers of sulphur until no more sulphur is dissolved. If acid is added to a hypo sulphur is dissolved. It acts a solution sulphur is again liberated, forming a solution sulphur. If milky solution known as milk of sulphur. sodium sulphite is present, however, any sulphur which tends to come out of solution combines with the sulphite to form more hypo, and the solution therefore remains clear.

This sulphur cannot be redissolved by adding sodium sulphite to the milky solution except by boiling, while on standing it is apt to settle on prints or plates as a scum. All acid-fixing-baths therefore contain either sodium bisulphite, potassium metabisulphite, or a mixture of sodium sulphite and some acid, and the following directions for mixing should be followed:

(a) Do not add the bisulphite or acid sulphite solutions to the warm hypo solution. solutions should be perfectly cold when mixed, or the hypo will turn milky.

Experience has shown that potassium metabisulphite has less tendency to produce milkiness than sodium bisulphite, though for practical purposes the difference is almost negligible.

Of the common acids, sulphuric, hydrochloric, acetic, citric, etc., acetic, citric, and tartaric acids have less tendency to produce milkiness for a given degree of acidity than sulphuric, which fact would be expected from theoretical

considerations.

(b) On keeping, an acid hypo solution gradually becomes milky, so that a stock solution of the sodium bisulphite, etc., should be kept and added to the plain hypo stock solution as required. For general purposes 50 c.c. of a 50 per cent. sodium bisulphate solution are added to 1000 c.c. of a 35 per cent. hypo solution. If any considerable excess over this amount is added, the hypo rapidly turns milky owing to the liberation of

sulphur, especially in warm weather.

3. Acid hardening baths are prepared by adding to hypo an acid hardening solution which con-

tains the following ingredients:

(a) An acid such as acetic, citric, tartaric, lactic, sulphuric, etc., which stops development.

(b) A hardening agent such as alum, chrome

alum, or formalin.

(c) A preservative such as sodium sulphite or sodium bisulphite.

The latter acts as a preservative in two ways. It prevents the formation of sulphur by the action of the acid on the hypo, while it also prevents the developer carried over into the fixing bath from oxidizing and turning brown.

How to Mix the Acid Hardener

Prepare the acid hardening solution as to separate stock solution, and add this to the hypo solution as required:

(a) When mixing in one vessel, first dissolve the alum in warm water, then add the acid and add the sulphite immediately, otherwise if the acid alum solution is allowed to stand the alum will crystalize out again. It is sometimes recommended to reverse the process, namely, dissolve the sulphite first, add the acid, and then the alum, but unless the alum is finely powdered

The order of mixing is important and as follows:

is warm, in which case sulphur dioxide gas is given off from the acid sulphite solution. (b) The best method is to dissolve the alum and sulphite in separate solutions, cool, add the acid to the sulphite, and then add the alum

this does not readily dissolve unless the solution

solution.

If the order of mixing is reversed, and the alum first added to the sulphite, a white sludge of aluminium sulphite is formed which dissolves with difficulty when the acid is added. Therefore if after mixing the hardener is milky and a sludge settles out, this is due to a relative insufficiency of acid, that is the acid used was either not up to strength, or too much alum or sulphite was added.

With all other hardening baths the order of mixing is the same.

Fixing-bath Troubles

1. Milkiness of the Fixing-bath. Sometimes a fixing bath turns milky immediately on adding the hardener, and sometimes after being in use for some time. The milkiness may be of two

A. If the precipitate settles very slowly on standing, the milkiness is due to sulphur, and

may be due to the following causes:

(a) Too much acid in the hardener.(b) Too little sulphite or the use of impure sulphite, in which case there is not sufficient

present to protect the hypo from the acid.

(c) High temperature. The hardener should only be added to the hypo solution when at room temperature. If the temperature of the acid fixing-bath is over 85° F., it will not remain clear longer than a few days even when mixed correctly. The only remedy is to throw the bath away, and mix fresh solution as required.

B. If the milkiness disappears on standing for a few hours, and a gelatinous sludge of aluminum

sulphite settles out, this is caused by:

(a) Too little acid in the hardener. example, supposing a formula calls for pure glacial acetic acid, and 28 per cent. acid is used by mistake, then we have added less than one-third the required amount.

(b) Too little hardener in the fixing-bath. When fixing prints, a relatively large proportion of the developer is carried over to the fixing-bath, which soon neutralizes the acid, and therefore permits of the formation of aluminum sulphite. In the same way a fixing-bath with the correct proportion of hardener, when exhausted, still contains alum and sulphite but no acid, and these combine to form a sludge of aluminum sulphite.

It is extremely important therefore to use only acid of known strength, because trouble is caused if we use either more or less acid than is called

for in the formula.

2. The Bath Does Not Harden. A frequent cause of insufficient hardening is the use of inferior alum which does not contain the correct proportion of aluminum sulphate. An exhausted bath which is alkaline will also harden very slowly, since alum hardens best only in acid solution.

Substitution of Chemicals

Occasion often arises when the photographer is out of stock as to some particular chemical, and he is tempted to replace the chemical by another. In this chapter it will be shown how far substitution is possible in the case of developing and fixing-baths, though the remarks will usually apply also to solutions in general.

In view of the present scarcity of potassium salts and their greater expense as compared with sodium salts, the question arises as to what extent they can be replaced by salts of sodium

or ammonium.

As a general rule, for photographic purposes, a potassium salt can be replaced by a sodium salt weight for weight, the error caused by the difference in molecular weight of the two salts being usually negligible. There are many exceptions, however, where there is a difference in the physical properties of the two salts for example, potassium carbonate and sodium bichromate are deliquescent, while sodium carbonate and potassium bichromate are not.

Substitution in Developing Formula

1. The Developing Agent. As a general rule it is not possible to replace one developing agent by another and obtain a developer with identical properties, because each developing agent has its own characteristics as regards rate of development, color of image produced, etc. In some cases, however, a close approximation can be made, for example by substituting for Elon, Kodelon (or paramidophenol) providing the developer is sufficiently dilute to permit of sufficient paraminophenol being dissolved. This applies either to an all Elon or an Elonhydroquinone formula.

If in an Elon-hydroquinone (or E-H) formula paraminophenol is substituted for the Elon and the activity of the developer is increased by the addition of alkali, the effect of the alkali is proportionately greater on the hydroquinone than on the paramidophenol so that a rapid hardworking developer is obtained. To avoid this, proportionally more paramidophenol is required

than if Elon is used.

2. The Preservative. It is now customary to substitute sodium bisulphite for potassium metabisulphite weight by weight, though in a plain fixing-bath sodium bisulphite has a slightly greater tendency to produce sulphurization

than the potassium salt.

The question is often asked as to the difference in action between sodium sulphite and sodium bisulphite. Sodium bisulphite may be considered as a compound of sodium sulphite and sulphurous acid, and therefore reacts acid, while sodium sulphite is alkaline, so that in the case of a two-solution pyro formula where the pyro A solution is preserved with oxalic acid or sodium

bisulphite, an equal weight of sodium sulphite would not preserve so well since pyro oxidizes much more readily in alkaline than in acid solution.

In the case of a one-solution developer containing, say, sodium sulphite, sodium bisulphite and sodium carbonate, the bisulphite is converted to sulphite by the sodium carbonate, according to the following equation: Sodium bisulphite + sodium carbonate = sodium sulphite + sodium bicarbonate; so that a corresponding amount of sodium sulphite might just as well have been added in the first place. Sodium bisulphite also neutralizes or destroys an equivalent amount of sodium carbonate, thus reducing the proportion of alkali, and therefore exerts an apparent restraining action, while the developer apparently keeps longer because some of the carbonate has been destroyed. The relative amounts of the different salts which produce the same preserving action is given in the following table:

Sodium sulphite . . . 1.0 parts Sodium bisulphite . . 8.3 parts Potassium metabisulphite 0.88 parts

For a two-solution developer therefore use sodium bisulphite, but in the case of a single-solution developer containing alkali use sodium sulphite, because in this case no advantage is gained by using a mixture of sulphite and bisulphite.

3. The Alkali. The common alkalis are the carbonates and hydroxides of sodium, potassium, or ammonium. Substances like acetone, tribasic, sodium phosphate, borax, and amines are occasionally used, but will not be considered here.

When sodium carbonate is dissolved in water a small proportion of it reacts with the water forming caustic soda and sodium bicarbonate: this is called hydrolysis, though only a small portion of the carbonate is hydrolyzed at any moment. As the caustic soda formed is used up in development, more carbonate hydrolizes so that we can consider that carbonate acts as a reservoir of caustic alkali. If in the first place a solution of caustic soda was used of the same alkalinity as the carbonate this would soon be used up. The use of carbonate therefore enables us to use a small concentration of alkali, and yet keep it constant during development.

It is rarely possible therefore to replace caustic alkalis by carbonated alkalis such as sodium or

potassium carbonate.

Potassium carbonate is slightly more active than sodium carbonate in solution because it hydrolyzes to a greater extent. For developing motion-picture film on a reel when the developer may splash on the floor, potassium carbonate cannot be supplanted by sodium carbonate since, because of the deliquescent nature of potassium carbonate, the splashes of solution remain moist thus preventing the formation of carbonate dust in the air.

Caustic soda and caustic potash may be replaced, weight for weight, in most formulæ.

Ammonia and ammonium carbonate are seldom used in developers on account of the odor, and the fact that they tend to cause dichroic fog.

Desiccated and Crystal Sodas

Sodium carbonate and sodium sulphite are often supplied in two forms: Crystals and the desiccated or dry variety, which is sometimes called anhydrous, because it does not contain water of crystallization.

Desiccated sodas possess the advantage that they occupy less than half the bulk of the crystals, while desiccated sodium sulphite is much less liable to oxidation by the air than the crystalline

variety.

The sodas should be substituted as follows: One part by weight of sodium carbonate (desiccated) for three parts by weight of the crystals.

One part by weight of sodium sulphite (desic-cated) for two parts by weight of the crystals.

4. The Restrainer.

Potassium bromide may be substituted by an equal weight of sodium bromide. Ammonium bromide should not be used in a developer because the alkali liberates ammonia gas, and this tends to produce dichroic fog as above.

Substitution in the Fixing-bath

Sulphites and Bisulphites. The same remarks apply as to preservatives in the developer.

Alums. An alum is a compound or double salt of aluminum sulphate or chromium sulphate with either sodium potassium or ammonium sulphate. The hardening action is only produced by the aluminum or chromium sulphate, so that equivalent weights of aluminum sulphate and of sodium, potassium, or ammonium alum should exert the same hardening action.

As a result of a series of practical tests by the author, the following conclusions have been

drawn:

(a) Equivalent amounts of potash alum and aluminum sulphate exert the same hardening action, two parts by weight of aluminum sulphate being equivalent to three parts by weight of potash alum. Commercially pure aluminum sulphate is satisfactory if this does not contain an excess of iron, though if the sample is acid the solution should be neutralized with ammonia. When mixing the usual liquid hardener formula with commercial aluminum sulphate, a slight milky suspension is formed which should be allowed to settle and filtered off.

(b) There is no appreciable difference between sodium, potassium and ammonium alum in their hardening action when substituted weight for weight in the usual formulæ. In practice, if any difference in hardening action occurs, this is due to the use of impure alums, in which case, providing the impurities are harmless, an increased amount of the alum should be used so that its content of aluminum sulphate is the same as that in the potash alum called for by

the particular formula.

When using ammonium alum, if the fixingbath becomes alkaline by virtue of a neutralization of the acid by the developer carried over, ammonia will be liberated resulting in the production of dichroic fog and stain. No trouble will be experienced, however, if care is taken to keep the bath acid.

Pure chrome alum may also be substituted for potash alum, as above, though it has a slightly greater tendency to precipitate sulphur than potash alum. It has the advantage, however, that it does not form a basic sulphite as rapidly as potash alum, so that a chrome alum fixingbath remains clear even when appreciably alkaline.

Acids. The most commonly used acids are acetic, citric, tartaric, and sometimes lactic acid. Strong acids like sulphuric are seldom used because of the great tendency to liberate sulphur. Weaker acids like the above bear the same relation to a strong acid as a carbonated alkali to a caustic alkali, that is they act as a reservoir of acid, so that only a small portion of the acid is available for reaction in solution at any one time.

Acetic acid is usually supplied in two strengths, glacial (98 per cent.) and 28 per cent. acid, so that one volume of glacial acid is equivalent to three and a half volumes of 28 per cent. acid.

Citric and tartaric may be substituted weight for weight and when used in place of acetic, substitute in the ratio of one gram of citric for every 3 c.c. of 28 per cent. acetic acid.

However, these acids are not quite so satisfactory as acetic because for a given degree of acidity as measured by the amount of alkaline developer which can be added to the fixing-bath before the bath becomes neutral, citric and tartaric acids have a greater tendency to precipitate sulphur from the hypo than acetic acid.—I. I. CRABTREE.

Multiple Vignettes with Print-out Papers

In the case of bromide and gaslight papers multiple vignettes present little difficulty with register lines on the back of the paper, which, in one well-known method, is caused to travel and a fresh surface exposed for every negative in turn. In the absence of some special contrivance, this is not possible with daylight-printing papers, and if one were devised it is doubtful whether it would present any advantage. It therefore follows that it is compulsory to use a printing frame large enough to take the strip of paper, and in the majority of cases it is also obligatory that two successive printings be employed, for the reason that in the print the distances required between the vignetted heads is usually less than the distances between the same points when the negatives are laid side by side in contact. Consequently, they cannot be printed simultaneously unless the negatives are cut down, which, for various reasons, is often not desirable. In the method to be described this is presumed to be so, and although it originated with the writer, there is no doubt it has frequently been evolved, being a plan more or less forced on one by the conditions, though details of procedure may vary.

The idea was to so scheme out things that the general set-up might be handed to any intelligent young lady printer, who, after familiarizing herself with the hang of the thing, should ex-perience no difficulty in printing the multiple vignettes, and it was found successful in practice. Feminine nature is stated to be complex, and this may be so, but assuredly it does not respond



sympathetically to undue complexities in print-

A piece of white paper is first cut the size of the printing paper to be employed. proofs (preferably fixed) from the negatives are trimmed close to the subject and stuck down in correct position on the paper. With standing figures vertical lines cutting them truly can be made on the proofs, and a set-square applied to them, and the bottom of the paper will ensure

the figures standing upright.

The position, spacing, etc., will depend on the subjects and the taste of the printer, but often the chins are placed equidistant from the bottom of the paper. Before the prints are stuck down, horizontal lines are ruled across them roughly at right-angles to the vertical, and cutting the extremities of the chins: a horizontal line ruled across the paper at the right distance from the bottom will ensure this. It is quite necessary to have the guide print correct, as it is the basis for the subsequent setting-up. Finally, the proofs are given consecutive numbers, numbering from left to right in the customary way, and the negatives are plainly marked to

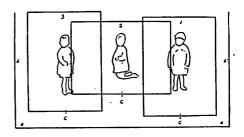
correspond. In the following notes a triple vignette is taken as an example, but exactly the same principle applies to any number of negatives. Briefly, it consists in assembling them in a cardboard carrier behind a multiple immovable vignette, with openings appropriate to the negatives to be printed underneath. It is therefore necessary that they occupy the correct position in the printing frame relative to each other and their corresponding opening in the vignette. With a triple vignette the center negative is, say, printed first with the openings in the carrier on either side masked out to prevent any possible action by stray light. remaining two negatives are then printed together with the space between them masked out. In both cases the openings not in use in the vignette are covered. Accordingly, we have to make a card carrier, the vignette, and two masks, and devise some simple scheme for registration.

A piece of white tissue paper is taken larger than the guide print, is placed over it, and the outlines of the subjects are boldly traced, taking care no shift occurs while doing so. Mark also by lines or dots the position of the bottom and sides of the guide print. Remove the tissue paper, turn it over, and repeat all lines on the side now uppermost. Consecutively number the subjects from right to left and mark the paper "film side."

At the bottom of every negative make a mark (for registration) on the film of the rebate. Place the negatives in turn, film uppermost, on the tissue paper so that the image corresponds with the lines drawn, and with a pencil draw round the edges of the glass, and also place a dot against the registering mark. If the negatives are dense, this may have to be done by transmitted light.

The diagram illustrates affairs so far as we have now got. The position of the negatives is shown at 1, 2, and 3 (indicating their position in the card-carrier subsequently to be cut out). The bottom of the printing paper is indicated at a, a^1 ; the sides at b, b^1 . The registering marks c

are not in all cases necessary, but they insure exactitude, and are no trouble to include.



It will be apparent from the diagram that when the middle negative is being printed a space will be left on each side through which light may creep from the central vignette—edges of negatives have a nice trick of catching stray light and distributing it where it is most decidedly not wanted. These spaces, therefore, require protection, together with the clear rebate

of the negative being printed.

The mask is made by laying down another piece of tissue paper of the requisite size on the diagram and tracing round inside the central rectangle; about 1 inch clearance will more than allow for the rebate. The paper just drawn upon is turned over, a dab of gum is placed within the rectangle, and the tissue paper is stuck down on orange paper and the rectangle cut out. In the same way, a second mask is made to shield the central space when negatives 1 and 3 are being printed, and also protecting their rebates. The masks should not extend so as to cover the lines indicating the bottom and

sides of the printing paper.

Again, we lay another piece of tissue paper on the diagram (or on the guide print if the images show through the tissue), and the amount of each subject is traced, taking care no shift occurs. The tissue paper is stuck down on brown paper or thin card in the same way as mentioned for the masks, and enables the three vignette openings to be cut out in exactly the right position relative to each other. Mark the side on which the tissue was stuck "under-side."

We now take the diagram and on the reverse side put dabs of gum well distributed over the inside of the three rectangles, and stick it down on card. Prick through a, a^1 , and b, b^1 , and also the registering dots c. The boundaries of 1, 2 and 3 are then cut out and the lines representing the bottom and sides of the printing paper are reproduced with a pencil. A touch of the pencil to the pricked dots c will make them plainer.

The card carrier is inserted in the printing frame, and, if not an exact fit, is attached to the glass by gummed strips. Negatives 1 and 3 are placed in their respective openings in the carrier. If a reasonable fit, well and good; if not, the registering marks on the negatives and dots on the carrier will ensure exact positions, and applied gummed slips temporarily retain them.

A piece of white paper is put behind the negatives and the back of the frame inserted. The vignette is then adjusted by sight; if correctly placed for 1 and 3 it will also be right for the middle negative. Should inspection be difficult owing to density of the negatives, the subject can be previously outlined on the glass side with white water-color pigment, which is washed

off after the adjustment.

If a print-out silver paper is employed, inspection in the usual way will indicate which of the negatives require printing up, the vignette openings over any negatives sufficiently printed being covered. With platinotype or allied papers a skilled printer doubtless could do the same, but large frames are awkward to handle, and in all cases small trial prints are desirable to test the vignetting. If these are exposed with a printmeter (the single-tint type being specially recommended), the exposures for the final compound print can be ascertained. Should printing be conducted by mercury light, the question is merely one of time variation. The carbon process should present no difficulty with trial pieces of P. O. P. as a guide to exposure, but has not been tried by the writer.

The way in which the negatives are inserted has already been mentioned. In the present case, negatives 1 and 3 occupy niches of their own, preventing material shift, but it is obvious there is nothing to indicate the correct position laterally of No. 2, which is free to slide either way, and requires registration as described, and also affixing by gummed slips. The registering lines a, a^1 , b, b^1 , ensure the printing paper being replaced in the same position after it has been removed on a shape of requirement.

removed on a change of negatives.

The foregoing method may seem somewhat formidable, and although no difficulty arises in setting-up, it certainly does take some time, but time well spent if certainty of results and ease of printing be considered; moreover, five or six negatives can be dealt with as easily as three.

A question may naturally arise: why employ daylight-printing papers for the job when bromide papers, affording more facility, are available? The answer will largely depend upon the printing medium generally employed, and, possibly, to some extent upon the price charged. As a prominent professional and keen business man put it to the writer: "I really haven't the face to charge several dollars for a worked-up multiple vignette, and supply it, maybe, on precisely the same paper as used by the cheap studio over the way."—B. J.

Photographing Small Objects

WHEN small objects are to be photographed, various departures from the course adopted in other branches of work may sometimes be made with advantage. For example, in focussing we may extend the camera as far as it will go, and then leaving it like that, we may get the image sharp on the ground-glass, by moving the whole camera to and from the subject, or, if it is more convenient, by moving the subject itself. enables the image to be got upon the largest scale which is possible with that particular lens and the camera extension ordinarily available.

If this scale is not large enough, there are two alternative courses. One is to shorten the focus of the lens by the addition of another lens, or magnifier: the other is to construct some arrangement which gives, temporarily, a further extension. Although at the first glance the magnifier plan may seem the easier, the other is to be preferred. It does not call for much skill or ingenuity to provide a temporary front to the camera, which can be made to take the place of the ordinary front and hold the lens at about twice the distance from the plate which is customarily required. If made of cardboard, and painted a dead black inside, it will do just as well as the most elaborately finished mahogany structure.

If the objects are to be shown by themselves, without any indication of a background with which they are in any connection, it is often possible to attach them to a clean sheet of glass in some way. Cobbler's wax makes a suitable adhesive in some cases; in others, sealing wax, American plaister, gelatin lozenges, etc., may be used for the purpose. Whatever adhesive is employed, it is applied behind the object, so that it is completely hidden from the lens. The glass is then supported vertically in front of the camera, the object focussed, and the effect of different backgrounds may be tried by using sheets of paper or card, some little distance behind the glass. If the objects are to be shown on a perfectly plain ground of white, a sheet of white card placed at an angle to reflect more light than it would if parallel with the glass may be used. In such a case, it is important to use a backed plate, so as to get the outlines of the subject well defined against the light ground.

If adhesives must not be used, the same result can be obtained by placing the objects on a sheet of glass supported horizontally a foot or so above the floor. The background is placed on the floor, and the camera fixed vertically above. As unless some special form of stand is used, it is not very easy to vary the height of the camera, the glass may be supported on a couple of piles of books, and brought nearer to or further from the lens by adjusting the height of these piles. When work indoors is being done in this way, the camera and object should not be close to the window, but a little distance away from it, so as to get a good side lighting. In such a case it is almost always necessary to put on the opposite side to the window a reflector of some sort—a sheet of white paper hung over a chair will do-so as to moderate the shadows.-R. N.

ENGLEFIELD, in Photography.

Adjusting Loose Gelatin on Negative

WHEN the fingernail accidentally catches the wet gelatin of a negative, a piece of film is generally left hanging loose, and it is a difficult matter to get it back into its place without showing a pronounced mark. The difficulty arises from the fact that the piece of film has expanded, and instead of fitting nicely into the space from which it was torn, it overlaps at the edges. The way to overcome this is to soak the negative in a mixture of half methylated spirits and water. This will shrink the piece of film down to its original size, when a little delicate forcing with the spotting brush will replace it, almost without showing any mark at all. Methylated spirit of full strength should not be used. This would shrink the piece of film too much, and would make the cure worse than the disease.

The Kallitype Print

In every step of life's progress the effort is toward ultimate perfection, and in no phase of endeavor is this desire more apparent than in the profession of photography. Among this great company of photographers we find the names of many, who not only have educated the seeker, but have done much to bring the profession out of obscurity and doubt into the light of public favor, and to whom we as strugglers along the pathway of progress-must feel sincerely indebted.

From out of the many names of men who have helped to enlighten there is one whose name will always be a beacon, where those who love the dark-room foregather; we mention, Sir John Herschel, who, after much experimentation, developed and perfected the foundation of Kallitype, a printing process that is without question thoroughly good. This process was at a later date elaborated and improved by

the efforts of Dr. John Nichol.

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oo much is he disease. The natural sequence, after the invention of a very excellent printing process, meant the selection of a name that would be in a measure, self-explanatory, yet simple in composition and easy to remember. We, therefore, find the eventual selection was the name Kallitype; which, by the way, is certainly a very descriptive one. The word Kallitype is derived from the Greek and is translated as "Good Pictures." While this title may be considered symbolical and sufficient as a name, there is no question as to its paucity as a descriptive noun; because Kallitypes are much more than merely good pictures—they are without question the best of pictures and those who are about to experiment with this delightful process will most certainly agree that the results obtained are well worthy of the term "superlative."

The Kallitype Print

The first steps into the land of the unknown must not be fraught with fear, as the Kallitype process is, in many respects, a simple one and those who are familiar with plain silver or platinum printing, and particularly the latter, will find progress in working equally simple, as the same care and judgment must be used in working one as the other. In this process much latitude may be had in the effects desired and every print may become an individual unit at the pleasure of the worker. The chemicals necessary are few and may be readily found in the nearby photo supply shops or the larger chemical houses.

Another factor which must have the serious consideration of the worker is the one of paper, because much of the effect of the finished print rests upon the selection of the suitable paper. However, the markets afford such an array that we may secure with little or no trouble that which appeals to our taste and good judgment. There is almost every desired color, weight and texture from which the worker may choose that which his fancy and pleasure dictates. Very excellent results have been obtained from the use of Whatman and Fabriano papers and, in fact, any good water-color paper may be

used and the results will be found generally satisfactory. Two-toned effect may be easily obtained by using a toned paper. Among such worthy of mention is Vellum, imported by the

Japan Paper Company.

There are many other papers which may be used, but extreme care must be taken to secure a high grade stock on account of the impurities in the cheaper grades. The body of the paper selected should be carefully studied for imperfections as it will be found that for the best results the paper should be sized.

Sizing the Paper

Sizing will not be found a troublesome process, and in the end will well pay for the effort expended as it will give the print brilliancy, whereas without sizing, the result rendered may be blotchy and muddy.

To size the paper the following method is highly recommended, although any process that has been found satisfactory by the worker may

be used in place of the one suggested.

Sizing Solution

Water thermometer	te	:st,	70°	•	15 oz.
Gelatin				٠	80 gr.
Methylated spirits	•	•	•		4 oz.

If the gelatin dissolves too slowly, it may be hastened by immersing the container in a tray of warm water of about 90°, which will soon bring it to fluid form, which then must be filtered through a piece of finely-meshed cheese-cloth.

As the process of sizing is of importance and has a large bearing on the quality of the finished print, great care must be observed to do it thoroughly, using the solution at 80°. Some prefer to float the paper, others use the brush. This latter method seems to work out more satisfactorily, as the paper will dry out much quicker; and if care be taken to size one side of the paper at a time allowing it to dry before proceeding with the other side, the results will be better.

Sensitizing

Proceeding with our effort we arrive at the point where it becomes necessary to use a certain amount of discretion, and as the subject might be enlarged upon indefinitely it might be better to avoid complications and give a simple formula that has proved satisfactory, and is in a measure one of the easiest to work with; however, after the novice has obtained results with the given formula he may change the proportions of the solution and with little experiment he may obtain great varieties of effects.

Sensitizing Solution

Distilled water .			5 oz.
Ferric oxalate .			400 gr.
Potassium oxalate			100 gr.
Silver nitrate .			100 gr.

The above chemicals are to be dissolved in the order given, and then carefully filtered



through two thicknesses of nainsook. It should be noted that the ferric oxalate must be in the form of bright shiny scales which will result

in a clear amber solution.

It has been found in sensitizing the paper that a camel-hair brush, 2 or 3 inches wide, will give satisfactory results. Many people, however, have reason to prefer the Blanchard brush, which is easily made by using a 4-inch square of celluloid turned over the end of flat wood of about the same width and about \(\frac{1}{2}\) inch thick, which must then be covered with a piece of flannel folded over twice attached to the wooden handle by means of rubber bands.

The next step in our progress toward sensitizing lies in coating the paper. This work must be done in a subdued light of the same character that is always used in developing such papers as Artura and other papers of like nature. To secure the even surface required the paper should be brushed carefully along its length and then thoroughly across its width, making sure there are no overlapping brush marks, which will, if they exist, later appear in the print. After the paper has thus been carefully treated, it may be hung to dry in a dark room.

Printing

Having reached this stage of our work, we approach the point of printing, and to those familiar with the processes employed in platinum, will find this part of the work very similar; and if the same care is used in the Kallitype printing as is used in the former method; the result will be found of equal merit. There are several points, however, that we might suggest to those who are not familiar with platinum printing and about to give this process a trial. The paper must be kept away from white light while being placed in the printing frame and while being examined for the progress of the print.

When the middle tones begin to show a light tint, the print is now ready for developing, which must be done under such light as is described for sensitizing, we are then ready for the developing which may be prepared as

follows:

Developing

To write at length about the process of development perhaps to the beginner would be more of a hindrance than good sense, and in order to make matters easier and more simple the following method and formula will be found most satisfactory with the given sensitizer and average negative.

Developer

Hot water					40 oz.
Powdered borax					2 oz.
When the above ha	s co	oled	i ad	d:	

Rochelle salts 3 oz.

To develop properly use two trays of a size convenient and easily handled. The developing is accomplished in the following manner: Take 20 ounces of the solution for each tray, to which add, in number one tray, 10 drops of saturated solution of bichromate of potash. The mixtures in each tray must be thoroughly mixed before proceeding with the developing, which we are now ready to do. We must, however, keep a few important rules in mind, which have been found necessary to the material results of the effort desired and are noted as follows: Extreme care must be taken to have the paper quickly and evenly covered with the solution and every effort must be made to avoid air bubbles, which if they do occur may be broken by giving them a touch. We have noted that two trays are to be used.

We have noted that two trays are to be used. Our purpose in making special note of this fact may be explained as follows: The number one tray containing 10 drops of potassium bichromate is to be used as the primary solution into which we immerse the print under process, and if it is found to be coming along to our satisfaction, this may be considered the final bath. However, if the print lacks brilliancy it is necessary to quickly immerse print in tray number two till the desired state of brilliancy is obtained. After the yellow tints have disappeared from the high-lights, the print may be rinsed for a minute, then transferred to the fixing-bath, which is made as follows:

			Fix	ine-	bati	z	
Water					•		80 oz
Hypo							1 oz
Stronge	r aı	mm	onia	1			1 oz

At this point it is well to note that care must be taken to have the print well under the solution and it must be kept moving, to assure even fixing, which ordinarily may be considered sufficiently done in from ten to fifteen minutes.

Washing

Having reached the point where all chemical reactions have produced our aim, the print is now to be washed under running water for about thirty minutes, being careful not to have prints padded together preventing even washing.

Drying

With such papers as Whatman or other of like nature it is better to first blot them and then hang them to dry, or they may be finally dried in blotters.

The print has now reached a point where the mechanical part may be considered finished and the next step must of necessity rest upon the good judgment of the worker himself.

Therefore, it seems of prime importance that after we have taken time and trouble to produce a print that is thoroughly artistic and beautiful a reasonable amount of care should be given to the proper mounting of it. There are many mounts that may be had in colors and papers that imitate almost every known texture, but in the end a simple paper of neutral tone that will neither distract nor destroy the effects of our prints will be found most satisfactory.

A friend who is interested in the artistic side of photography recently said, that it seemed to



him as though many photographers must have bought their mounts in the junk shops, as there was so little consideration given to the tonal values of the photographs that were mounted

All this, of course, must rest upon the one who creates the print and while there are no set rules that may be followed, the simple one of good common sense will go a long way toward making a success of one's efforts.

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s follows:

With much left unsaid that may have helped, perhaps hindered, I offer this small portion as, I hope, a little lift toward the better things of the "Game" with just a word in passing, that as "every laborer is worthy of his hire," Kallitype prints are worthy of a good price and to those who seek the best, price is quickly forgotten while the memory of a worthy thing will live long and flourish.—PASQUALE S. CULOTTA.

Photographic Materials and Processes

Photographic rendering of contrast; The funda-mental law for the true—. A. W. Porter and R. E. Slade. Phil. Mag., 1919, 38, 187—197.

Assuming that for a true rendering of contrast in a print it is necessary to have the same ratio of light emitted from two portions of the final picture as that which fell in the camera from the two corresponding portions of the subject, the authors deduce the relationship between the characteristic curves for the plate used for the negative and the material used for the final picture. If E₁ be the light incident on any point of the plate and I1 be the light transmitted by the corresponding point of the print (for simplicity taken as a transparency) when illuminated by light of strength V, then $I=KE_1$ where K is a constant reduction factor. If the characteristic curve (logs, exposures plotted against densities) of the negative plate be known, the authors show that to maintain the ratio $I=KE_1$ the characteristic curve of the printing material is obtained by turning the plate curve through 90° and then viewing it from the back. The position of the origin of the new curve is dependent upon the particular values selected for the printing and viewing lights of the positive and upon the reduction factor, K. The nearer K is to unity the more nearly will the light from the positive be not only the same in gradation as that from the subject but also the same in absolute intensity. Taking the simpler (theoretical) case where the whole of the negative image is within the straight line portion of the plate curve, a printing medium must be selected with a sufficiently long straight line portion and developed to such a gamma that the product of gammas of positive and negative is unity; this is fairly easy for a transparency but it may be difficult for a print on paper, since papers have generally a very short straight-line range. It is not necessary, however, to be restricted to the straight-line portions of the curves since there is a certain amount of correspondence between the lower (underexposure) portion of a plate curve and the upper portion of its conjugate; by careful selection of negative and positive materials it is possible therefore to get a fair approximation to a correct rendering in the print, or a major portion of it,

using the underexposure periods in both cases. The work and conclusions of previous workers in this field—Hurter and Driffield, Jones, Nutting and Mees, Renwick, and Rayleigh—are subjected to considerable criticism.

Intensity- or intermittency-scales for sensitometric purposes. Some remarks on their applications. A. Odencrants. Z. wiss. Phot., 1919, 18, 209—

A HISTORICAL summary of the various methods used in obtaining graded exposures for photometric purposes is given, and the objections to the intermittency time-scale (sector wheel) method are discussed in some detail. The main argument against the use of an intensity screen, that of the possibility of spectral selectivity of the absorbing medium, is overcome by Goldberg's method of obtaining neutral tint wedges of either the continuous or the step form. The author used a wedge of a range of about 1 to 10,000 in a simple form of dark slide, allowing a number of exposures to be made side by side on one plate and having two plate-holders to accommodate different sizes of plate. Exposures were made with a 10-bolt osram-nitrogen lamp which was controlled with the aid of a millivoltmeter, a constancy of 1 per cent. in the light value being easily maintained. For easy interpretation of the results, more especially where only comparisons were required, prints were taken of the wedge pictures on a hard-gradation development paper, positions of equal density on different pictures being easily selected by direct comparison of the prints. Figures are given showing the difference in halation with an ordinary plate and an Isolar (anti-halation) plate and the different effects of a series of color-filters on an ordinary and a color-sensitive plate.

Intensity weakening for development papers. [Schwarzschild's constant.] A. Odencrants. Z. wiss. Phot., 1919, 18, 220-226.

WITH apparatus described in the preceding abstract determinations were made of Schwarzschild's constant (p in the expression $i_1t_{1p}=i_2t_{2p}$, for equal effects, where t is the time of exposure and i the corresponding intensity). A series of eleven exposures, increasing or decreasing by the ratio 1.5 for consecutive exposures, was given, the positions of corresponding points on adjacent images noted, and p determined from the usual formula $p = (\log I_2 - \log I_1)/(\log I_2 - \log I_2)$ $\log t_1$). A table is given showing the results obtained for seven papers of different makes and qualities with a normal metol-quinol developer, also for one of the papers with a metol and a quinol developer and a mixture of these, with another paper for different times of development, and with another paper for violet, blue, and blue-green filters. The total range of p was from 0.67 to 0.95. The results indicate that pincreases with hardness, and that different developers give different values of p, metol (a rapid developer) giving a higher value than quinol (a slow developer) (p=0.94 and 0.85 resp.); in the mixture the effect of the metol dominates. Increase of time of development gives a higher value for p (0.83 for 20 secs., to 0.87 for 120 secs.).

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Within the range of the maximum of sensitiveness p remains constant with variation of the wave-length; outside these limits p decreases with increasing wave-length (p=0.9 for blue and violet and 0.87 for blue-green). Within the limit of ordinarily used light intensities p is almost constant; it may possibly increase somewhat with increasing intensity.

Milk-silver photographic emulsions. B. Maklakoff. Russ. phot. Anzeiger, Odessa, March, 1916, 90. Z. wiss. Phot., 1919, 18, 240.

An emulsion suitable for the preparation of sensitized paper is obtained by adding a solution of 2.3 gms. of silver nitrate and 0.3 gm. of citric acid in 10 c.c. of water, treated with ammonia slightly in excess of the quantity required to re-dissolve the precipitate first formed, to a solution of 2 gms. of potassium bromide and 0.3 gm. of sodium chloride in 40 c.c. of cream, raised nearly to boiling-point. The emulsion is kept in hot water for some hours, filtered and then coated on the paper. After drying, the paper is washed with distilled water and again dried.

Photographic plates; Influence of temperature on —. G. von Dalezki. Russ. phot. Ber. Odessa, 1916, 155. Z. wiss. Phot., 1919, 18, 233—234.

The apparatus used consisted of a camera with revolving plate-holder and suitable lens and shutter, before which was placed a matt-white screen illuminated from the side by a Uviol lamp. An image of a small rectangular patch was thrown on to the plate, by revolving which eight such images could be received by one plate. The apparatus was enclosed in a double-walled, water-jacketed chamber, dead black inside, the temperature of which could be controlled to $\pm \frac{1}{2}$ ° over the range 7° to 64° C. With white light a temperature coefficient was obtained of 1.06 with plates in their usual condition, and also with plates thoroughly dried. With pinachrome-sensitized plates the values obtained were 1.04 for blue light and 1.08 for green light and yellow light, or if the plates were previously slightly fogged, 1.03 for blue light and 1.04 for green and yellow light. Previous determinations of temperature coefficient have been: Lumière, -190° to 20°, 1.03, Schellen, -32° to 90°, 1.00, Padoa-Mervini, -85° to 15°, 1.05, and, for previously fogged plates, Abney and Dewar, -190° to 200° C., 1.08.

PATENT NEWS

Pigment or "carbon" printing by silver. T. P. Middleton, London. Eng. Pat. 127,953, 5.6.18. (Appl. 9293/18.)

The sensitive film is a thin coating on a temporary support of a gelatino-bromide of silver emulsion containing a suitable pigment such as lampblack, sepia, etc., not affected by the subsequent processes. The emulsion is preferably of the type in which emulsification is carried out

in part only of the gelatin, this allowing of the intimate mixture of the pigment with the remainder of the gelatin in ordinary actinic light. The temporary support for the sensitive film is one which allows the transfer to the final support, or to the intermediate support in case of double transfer, by stripping when dry or by aid of a solvent, such as alcohol or benzene, but not by the assistance of hot or cold water. In order to equalize the exposures with differently colored pigments and to keep the effect of the exposure as far as possible in the upper layers of the film, a non-actinic dye such as Naphthol Yellow may be added to the emulsion. The developer used should be one, such as amidol or glycin, with only slight tanning action on the gelatin; fixing should be effected in a bath made slightly acid, preferably with boric acid, or may be omitted. After transfer and removal of the original support the silver image is bleached in a bath such as a solution containing chromic acid, copper sulphate, and potassium bromide, the silver bromide thus produced is fixed or developed, and the film washed and dried. In the double transfer process the intermediate support is preferably prepared by treatment with a solution of caoutchouc, gum elemi, and gum dammar in benzene which allows transfer by mere stripping.

Photographic materials; High-temperature development of—. A. J. Agnew, F. F. Renwick, and Ilford, Ltd., Ilford. Eng. Pat. 128,337, 20.4.18. (Appl. 6723/18.)

To allow of the development, etc., of plates, papers, and films at high temperatures the gelatin film is first hardened by treatment in a bath containing formalin and a salt which has the property of raising the melting-point of a gelatin jelly and of retarding or restricting the absorption of water by dry gelatin; the restraining action of the salt allows the hardening effect of the formalin to take place before melting of the gelatin film, which might otherwise occur in a solution of formalin alone. The most suitable salts are sodium citrate, sodium, ammonium, and magnesium sulphates, and disodium orthophosphate, a suitable solution being 2½ per cent. of 40 per cent. formalin and 20 per cent. of sodium sulphate. Paraformaldehyd or other substance easily giving formaldehyd in solution may be used in place of the formalin solution; a solid preparation in convenient form may be made by mixing paraformaldehyd and one of the salts in anhydrous form. After rinsing, to free the film from excess of the hardening solution, the developing process may be at once proceeded with, no restrictions as to the developer being imposed by the hardening bath. The temperature may be as high as 110° C. and no cooling device is necessary.

Photographic colored image and process of producing the same. J. I. Crabtree, Assignor to Eastman Kodak Co., Rochester, N. Y. U. S. Pat. 1,305,962, 3.6.19. Appl., 25.1.17.

A SILVER image is copper-toned and then treated in a solution of a dye to which the copper acts selectively as a mordant.

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RENAISSANCE OF PORTRAITURE BY PHOTOG-RAPHY

By J. C. STRAUSS

→ INCE the earliest times the visible object of greatest interest to humanity has been the human face and form. Attempts at picturing man were among the first efforts toward reproducing the images most deeply impressed upon the mind. These crude representations not only excited interest, but by degrees became the object of admiration and veneration. Man often could find nothing worthier of his worship than images of himself. This worship developed to such an extent that one of the first and most important laws, at the very base of our present civilization, forbade idolatrythe ascribing superhuman and supernatural powers by man to images or pictures of himself. The Greeks had no brighter laurels or higher honors than for the sculptor and painter who most beautifully portrayed, on canvas or in marble, the features and form of man and woman.

This condition could not have existed

had not the great masses been peculiarly and deeply interested in and attracted by reproductions of the human face and body. While the masses, from the dawn of history onward, have always admired pictures of people, and taken advantage of opportunities to view them, it was not until the advent of photography that personal possession of portraits came within the possibilities of others than the wealthy or powerful.

The family album full of cabinet photos was, for a number of years, one of the favorite themes for jests by the paragraphers of the papers. They forgot, or probably never knew, that an interest in pictures of people is almost as historical, as universal and as natural as breathing.

Aside from electricity, no other development of the last six decades has become such an important factor in the daily life of the masses, or is applied in so many and to such widely diversified uses, as photography. It enters by (491)

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numerous channels of greater or less importance, into almost every phase or aspect of human endeavor. It is essentially an element to be considered whether one's activities are in any of the paths of art or of science, of mechanics or of commerce, of literature or of recreation.

Photography has become practically an omnipresent element in our civilization.

As applied to portraiture: Photography may now be said to be in its renaissance. Its earliest development. that of the daguerreotype, had a distinctive art element because of the individuality of the pictures. There were no duplications. The then known processes required a degree of skill on the part of the maker and length of time to secure results which of necessity made the portrait one free from faults of the mechanical prints which followed as the processes were made simpler. As, year after year, the manipulation of plates and papers become more easy, the photograph departed from the higher qualities of the daguerreotype and the evidences of machinery and the tendency toward commercialism increased. The descent was rapid and deep. The first downward step was taken when quantity became the important factor and, instead of individual pictures, repetition and duplication set in.

He who first proposed that photographs should be sold by the dozen, just as eggs or socks, pointed out the path which led to the discrediting of camera portraiture, inviting the scorn of the artist.

Canvasses painted over with impossible landscapes for backgrounds and papier maché moulded into ungainly accessories, followed. Certain stilted, conscious posings of subjects became the rule, and naturally pictures made by any one photographer were such a close resemblance to the work of all others that it made but little difference which "artist" was patronized, the finished product was just about what would have been obtained had some other "studio" been visited.

Pictures by some of the best-known

photographers, even those of New York City, could be recognized by the scenery and furniture because of the constant recurrence of the same pieces in their work. The standard conception of art was a face modelled like a cheap china doll. Each was smooth, puffed and rounded without a line of character, and the skin as white as a new paper collar.

One of the first changes of infinite relief to sitters was the abolition of that instrument of torture, miscalled a "head rest," but in truth a vise which chilled the marrow of the subiect. Next the papier maché settees. balustrades and fences were converted into kindling wood. The snow-capped mountains, the unending meadows and the tremendous waterfall were thrown into the ash heap. The little card stuck on a pole, toward which the victim must look pleasantly, was "fired." The constrained, affected poses were abandoned. The relative difference in various shades of color were considered. The over-retouching which left faces blank, putty-like lumps was rejected. The stupid method of making pictures of different persons, or of the same person in different poses, accommodate themselves to a predetermined size or shape of mount, was abandoned. revolution of method, this endeavor to educate out the wrong conception and to teach correct principles has taken years to reach its present status, where connoisseurs and critics admit the art element and value in camera portraiture. Necessarily much misconception remains, and the enlightening movement advances but slowly.

The repetition of backgrounds, the conventional, theatrical poses, the harsh contrast of black and white, the removal of lines of character, the uniformity of size, governed by mounts—these are some of the well-known features of the photograph which are still too prevalent.

The photographer who really has an earnest desire to make his work something more than a mechanical impression or map of the subject, gives to each print leaving his hands the stamp of individuality. The materials selected are such as will lend themselves to the

desired color tones and yet possess absolute permanence. Each impression receives individual chemical treatment —this in sharp contrast with the ordinary photograph of which hundreds may be treated in a mass. The background in each plate is essentially different from that on any other, being sketched by hands skilled in artistry—thus the background harmonizes with the subject and is in accord with the lights and shades of the portrait, making a pleasing general effect or ensemble. The size and shape of the portrait is also a matter of considerate study, no two poses being treated identically. form and dimension are made to adjust themselves harmoniously to the picture -so also with the color; instead of harsh contrast of light and shade there is a gentle gradation with truthful regard to their relation in life. Where the white lace falls upon the wrist of a

lady there is a difference of many shades between the flesh tone and that of the lace. In the photograph it would be false to make both appear alike, or nearly so.

And so on in each and every distinct detail of true portraiture by photography the one trait ever present is individuality. Just as no two persons or faces are identical, the portraits should

vary.

To secure this individuality of treatment requires trained assistants, having an artistic temperament, in all the departments of a photographic establishment. Such a portrait as is here contemplated, evidencing the artist touch throughout, can be obtained at a cost but little greater than that of the stereotype description; but when it is received it measures up to the highest standard—"a thing of beauty, a joy forever."

MAKING COLD-PROCESS STRIPPING PAPER AND PLATES FOR DEVELOPING OR PRINTING-OUT BY HAND OR MACHINE

By ALFRED J. JARMAN

PART II

HEN the paper has been carefully prepared, as described in Part I, it may be kept for any reasonable time before being coated with a sensitive emulsion, no matter whether it is to be coated by hand or machine. If the waxing has been done by hand it is advisable to roll the paper coated face outwards; then when it is to be coated with emulsion it must be rerolled coated face inwards for a short time, when it may be unrolled and the paper will lie flat.

It will be necessary, now, to prepare a small batch of emulsion, which must be made up in the following manner:

Making the Sensitive Emulsion

Procure two small stoneware crocks with stoneware lids; scald them out well with hot water; wash well in clean, cold water; stand them upon a clean cloth or towel upside down, so that they may drain and dry.

All the operations from now on (except the melting of the gelatin) must be carried out under a deep orange-colored light. Now weigh out

the following:

Am. Co.'s hard gelatin . . . 2 oz. av. Chloride of ammonium . . . 80 gr. Citric acid (crystals) 30 gr. Distilled water 6 fl. oz.

Let the gelatin soak in this mixture for half an hour, or an hour, so that it becomes permeated with the saline solution. Place the crock containing this into a saucepan of water, allowing it to stand upon a strip of wood, so that the water may circulate freely. Place the saucepan upon a gas-stove, and, as soon as the gelatin begins to melt, stir well with either a clean pine stick or a flat strip of glass until the mixture presents a uniform liquid mass. water in the saucepan may be brought to a boil, and continued for five or ten minutes, when the crock may be removed to the dark-room. illuminated as described with deep orange-colored light. Meantime prepare the following solution:

Distilled water 4 fl. oz. Recrystallized nitrate of silver 120 gr.

Stir this with a strip or rod of glass until the nitrate of silver is completely dissolved. Now pour this solution, a small quantity at a time, into the hot gelatin mixture, stirring well during each addition. As soon as the whole of this has been added, measure off 1 fluidounce of pure grain alcohol, in the same graduate that the nitrate of silver has been poured from. Add this, a little at a time, to the hot emulsion, stirring well while this is being added; keep up the stirring for a full minute, then place the stoneware cover upon the crock; cover the top well over with a tough quality brown paper so as to lap over the sides for a couple of inches, and tie this securely with a piece of strong string, taking several turns to make the covering secure; trim off the excess of paper with a pair of scissors, and cool the crock rapidly until the contents is well set. By this method of procedure an emulsion will be produced that will give a contrasty print.

Washing the Emulsion

A piece of canvas will be required for this part of the operation. The canvas best suited is the kind that is used by ladies for working wool patterns on and which has about an eighth of an inch mesh. The canvas must be well washed in hot water (use no soap) to get rid of the starchy matter used in the stiffening of the material. Now fill the second crock about three parts with cold distilled water, in which may be placed a few pieces of broken ice; place in the center of the wetted canvas a few lumps of solid emulsion; hold this in bag form with one hand, then twist the canvas tightly with the other hand; continue the twisting until the lumps of emulsion have been squeezed through into the ice-cold water. Treat all the emulsion in the same way; then fold the canvas over the top of the crock so that there is a double thickness; tie the canvas tightly over the top of the crock securely with several rounds of strong string; then turn the crock upside down, and let it rest diagonally so that the water may drain away. Return the crock to the workbench; let it stand in a suitable size enamelled-iron circular tray, so as to catch any water that may be spilled. Pour through the canvas another dose of cold water; swill the crock around and drain again. Ordinary filtered water may be used for all the washings after the first, and half a dozen washings will suffice, allowing the last draining to stand for an hour. The wash-water may be kept suitably cool by placing a few pieces of ice in a large stoneware pitcher. As soon as the emulsion has become finally drained the crock may be placed in position and the canvas untied, when the adhering shreds of emulsion may be carefully shaken into the crock. Now replace the stoneware lid; cover it as before with the same covering of brown paper; place the crock with its contents into a saucepan of water; heat it slowly; take the crock with both hands and swill it carefully round and round, so as to secure uniform solution of the emulsion. Ten minutes of heating will be sufficient. Repair to the dark-room; untie the cover; stir the emulsion and add one ounce of pure grain alcohol. Stir this well into the emulsion which will now be ready for filtering.

Filtering the Emulsion

Take an ordinary kerosine lamp chimney with a plain flue (by this is meant with no ornamental expanded finish); after cleaning, tie a double thickness of washed cheesecloth (good quality) over the narrow end of the chimney, and trim off any excess with a pair of scissors; place this into the ring of a retort stand, and press a small quantity of absorbent cotton (moderately tight but not too tight) into the chimney, so that it rests upon the cheesecloth. Having thoroughly cleaned the first crock in which the emulsion was made, place this beneath the inverted chimney; place a strip of glass about an inch wide into the chimney, so that it rests upon the cotton, and place into the crock another strip of glass of about the same width, so that the emulsion during filtration will fall upon this strip of glass; this will prevent the formation of air bubbles. As soon as the emulsion has become filtered, or during the filtering, place a reliable plain glass tube thermometer into the emulsion, so as to ascertain the exact temperature. As soon as 90° F. is indicated it may be poured into the coating tray that has been shellac varnished, as previously described. The paper now being ready, with the ends folded so as to enable it to be handled, bend it so as to assume the form of the letter J; then proceed to coat it in just the same way as described for both gelaitinizing and waxing. By exercising care the paper may be coated very evenly by this means. (One coating only will be sufficient.) Turn the paper so that one corner touches the inside of the tray; this will prevent air bubbles forming upon the surface of the emulsion. Now quickly turn the paper over face downward, and move it to and fro over a block of ice, or, if the room is very cold, simply wave it from side to side until the emulsion has become set, when it may be suspended in a suitable closet or room and dried in the dark. Treat all the pieces of paper alike, and when finished pour the excess of emulsion into the crock, which must again be covered with its

lid and brown paper, tied as before, and cooled off as quickly as possible. The emulsion, when first made, must not be allowed to become set into such a state of stiff jelly that it cannot be squeezed through the canvas. The exact condition may be readily ascertained upon trial.

As soon as the paper has become dry, which will require about twelve hours, take each sheet and cut off the ends for about two inches; roll each sheet upon the other, sensitive face outwards, and keep well wrapped in either brown or black paper until required for use. Assuming that the pieces required for printing are 4 x 5, re-roll the paper the reverse way, back outward; let them stay thus for five or ten minutes; this will take the curl out and the sheets will lie flat, so that they may be cut to size. When handling the paper, use a pair of clean white cotton gloves, which will prevent fingermarks being produced upon the sensitive surface.

Printing the Stripping Paper

Exposure of this paper may be made in the same way as for any other kind of developing paper, upon any suitable negative. Assuming that the time of exposure has been ten seconds, proced to develop in a 5 x 7 tray, with the following developer:

ps

If warm water is used in making this solution, it must be allowed to become cold before use, about 60° or 65° F. The image will develop in about ten or twenty seconds, with intense blacks and clean whites. As soon as the image is fully developed, dip it into a tray containing the following preparation:

Water (ordinary)			16 fl. oz.
Hardener .			2 fl. oz.

This will arrest development at once. The hardener may be made up as

follows and kept ready to hand for use as required:

Water (ordinary) . . . 16 fl. oz.
Powdered alum . . . 2 oz. av.
Sulphite of soda (dry) . . 2 oz. av.
Acetic acid, No. 8 . . 8 fl. oz.

Dissolve the alum first, then add the sulphite of soda; shake the bottle well, then add the acetic acid.

Fixing Bath

Water (ordinary) . . . 30 fl. oz. Hyposulphite of soda . . 6 oz. av.

When completely dissolved add:
Hardener 4 fl. oz.

After a momentary dip in the diluted hardening solution (acid dip, as the solution is termed) place the print directly into the fixing solution. Let it remain for ten minutes; this will cause the gelatin film to become very tough and well fixed. Now wash the print or prints (they may be handled like other prints) in running water for twenty minutes. Lay the print back down upon the bottom of a clean tray or a number of them; incline the tray so that complete draining may take place, so that the surface is free from water. The print or prints will now be ready for transfer to a plain sheet of glass, or a slightly concave surface. The concavity must not, however, be too deep, because the paper cannot be made to conform to a deep No sticky or glue-like depression. preparation is required to make the print in the wet state adhere to the glass, only the following solution:

Water (filtered) 10 fl. oz. Strong water ammonia . . 1 dram

This solution must not be stronger than that above given. Lay the glass plate down upon a clean sheet of paper or oilcloth; take the wet print from the draining tray; float it, or preferably pass it, once over the ammoniacal solution; lay it down upon the glass plate while holding it with both hands in the form of the letter U, allowing the middle to come into contact with the plate, then lowering each end;

place a piece of thin rubber sheeting upon the back of the print; hold this firmly at one end, then apply a soft squeegee, stroking the surface lightly; then increase the pressure, but not too heavily; then reverse the stroking of the squeegee from the opposite end. Remove the rubber sheeting; place a sheet of thick blotting-board or paper in lieu of the cloth; hold one end down and pass the hand or squeegee lightly over the surface so as to cause the blotter to absorb the moisture. The plate may now be placed in a rack to dry, which may require any time from six to twenty-four hours. An electric fan may be used to hasten the drying, which then takes place rapidly. When the print is perfectly dry the corner of the paper may be lifted with the tip of a knife, when it will come away freely, leaving the print upon the glass plate. The resinized or waxed surface may be easily removed by moistening a piece of canton flannel with benzine and wiping the surface well, finishing the removal with a clean dry cloth or canton flannel. The result will be a beautiful transparency with a fine grain if the paper was of the grained variety.

The waxing process may show a slight yellowing in the stripping paper. This, however, is of no consequence. The yellowing is due to the presence of the gold size in the preparing of the paper.

If the prints are to be in sepia, the color of the black print can be readily changed to sepia before transferring. The prints, either black or sepia, may be dried if desired and wetted again before transfer at any time. The conversion of the black print to sepia is accomplished in the following manner:

Converting Black Prints to Sepia

If the black print has been dried it must be wetted again and allowed to soak for at least five minutes.

Bleaching Solution

Α

= -		
Bichloride of mercury		3 drams
Distilled water		20 fl. oz.
Chloride of ammonium		2 drams



Place the wet print or prints into this solution; turn them over and over; allow them to become completely bleached. (Sometimes no image is visible after bleaching; this does not matter.) As soon as bleached, wash the prints well for several minutes so as to rid the paper of the bichloride solution. In another tray prepare the following solution:

B
Strong water of ammonia . ½ fl. oz.
Water 8 fl. oz.

Place the bleached print into this. In a few seconds the image changes to a beautiful bright sepia, a brown depending upon the depth that the print has been made in developing. A short washing in clean cold water is all that is necessary, when the prints may be drained as already described, and transferred in the usual way. When dry the prints will be found to be a true sepia, very rich and pleasing in color. Another solution may be used to cause the surface of the wet print to adhere to glass, made as follows:

Filtered water 8 fl. oz. Acetic acid, No. 8 ½ fl. oz.

Float the wet print upon this for a few seconds, then place it in position upon the plate for transfer, using the cloth and blotting-paper in the same way.

The ammonia method is to be preferred because acetic acid, if left in the film, may cause eventual fading. To be sure that the acetic acid becomes eliminated it will be advisable to lightly wash the print in clean water, when removed from the acid bath, before transferring.

The time allowed for these stripping prints upon the surface of the ammonia or acetic acid solutions, which causes a slight softening of the gelatin, must be short, namely, a few seconds, because by prolonging the time the emulsion will become softened quite through. This may destroy the image. All that is necessary is to attend to the operation quickly, when no difficulty will be experienced.

When using a shallow concave glass for the transfer, the wet paper print may be made to conform to the depression by means of a ball of soft rag. When the drying is complete the paper may be lifted, with the tip of a knife, in the same way as for the flat plate.

(To be Continued)

ARCHITECTURE

70U should look for your orders architectural photographs among different classes of people according to your district. If you live in a commercial or manufacturing neighborhood, your work will lie among factories, shops, hotels and restaurants, and you will have to deal with business men. If you live in a country town or residential suburb, however, you will probably be called upon to photograph country houses, castles, cottages, schools, churches or suburban streets. Your orders for this work will come largely from owners, tenants, estate agents, the press and publishers of local guide books.

Business men want photographs for

advertising. They want to show where goods are made, where they are packed and where they are sold. This class of advertising has proved so effective that now even small traders, such as grocers, bakers, tailors and ironmongers, are showing photographs of their premises in circulars and price lists. Boarding schools also make good use of photographs in their prospectuses.

Then, architects and contractors invariably want photographs of every building they put up. It is becoming a custom with these men to have important buildings photographed at frequent intervals during construction, to keep a record of progress.

Solicitors, too, frequently ask for

photographs to use as evidence in cases dealing with ancient lights, air space

and other legal disputes.

In all classes of architectural photography artistic treatment is desirable. Very rarely indeed will it lessen the value of the photograph as a record. It is not suggested that you should go in for fuzzy, impressionistic pictures—these you can do in your spare time, if your tastes run that way. You will see artistic photography of another sort if you look through the estate agent's advertisements in a paper like Country Life. In some of the photographs the houses appear so picturesque that they must at once catch the eve of anyone on the lookout for a residence. In others they appear so unattractive that the value of the advertisement is destroyed.

It is largely a matter of choosing the point of view. A few feet to the right or left to alter the angle, or a few paces back to get a tree into the foreground, makes a wonderful difference. the light has to be taken into account. Buildings with projecting fronts or with decorations, such as carving or statuary, are nearly always improved by strong sunlight striking the front of the building at an oblique angle—the shadows angle. The shadows give relief to the projecting parts and add roundness to the figures. On the other hand, a slight mist, instead of hindering you, may be an advantage. It will often screen out an ugly bit of distance which would be difficult to get rid of by retouching. shower of rain, too, may be invaluable. The reflections break up masses of uninteresting foreground. In summer a building may be hidden by trees, but in winter it may make a charming picture when seen through the leafless branches.

Even when these points have all been taken into account, an otherwise good photograph may be ruined artistically by the point of view being too high. A photograph fails if the position from which it was taken is one from which the architect never intended his work to be seen, and from which ordinarily it is not seen. It is sometimes necessary, especially with interiors, to take a photograph from the top of a step-ladder,

or a specially built platform; such a photograph may have its uses, but it is really a libel on the designer. Similarly it is a mistake to choose a central view which makes one side of the picture practically a repetition of the other. Judging by many of the interiors of churches shown on postcards, one would think that there was some decree against views being taken from any point except the middle of the aisle. A heavy column, near the camera, gives a mass of deep tone and makes the distant parts more telling by contrast. In the same way, two or three thin columns, with other parts of the church seen through the spaces between them, give a pleasing composition. Do not forget, however, that there must be some foreground shown in front of a column, if a most uncomfortable effect is to be avoided.

For all this work you need a camera that is rigid and strong; it must have a swing back, a rising front, and if the front swings as well so much the better. At least three lenses, of different focal lengths, should be included in your outfit. A tilting tripod top is a great convenience. It can be made by hinging two boards and fitting sliding metal struts to the sides. The tripod screw holds the lower board, and a similar screw fastens the camera to the upper board. This device enables you to tilt the camera to any angle without throwing the tripod out of balance.

At the very outset the question of perspective comes up. It is often said by photographers that a short-focus lens gives inaccurate perspective. is not true. The correct rendering of various objects in a photograph does not depend upon the focus of the lens, but upon the point of view selected. When you fix your point of view, you fix the perspective of your photograph also. No matter what the focal length of the lens may be, the perspective rendering remains unchanged. The only result of altering the focal length is to reproduce the scene on a larger or smaller scale. A short-focus lens gives the same perspective on a small plate as a longfocus lens gives on a proportionately larger plate.

It often happens, however, that you are forced to work so close to a building that you must use a short-focus lens with a fairly large plate—you must use a wide-angle lens. Now, a building taken from such a position will appear distorted. The top near corner will seem to bulge out; if there are any trees between the camera and the building, they will look to be much higher than they really are; and any adjoining houses will be dwarfed into insignificance. All this is the result of the too near point of view. If you look at the building from the same point as the lens, you will see the same perspective as the photograph has recorded. Nevertheless, the photograph appears inaccurate, because no one would deliberately choose such a near standpoint for observation.

It is evident, therefore, that for absolute truth and accuracy, you should use a long-focus lens whenever you can get far enough away from your subject to There are times, however, when you can turn the vice of a wide-angle lens into a virtue. For instance, an ordinary lawn, a few shrubs and a gravel path, in front of a house can be made to look like extensive grounds by deliberately choosing the near point of view and using a wide-angle lens. In the same way, a small room can be made to suggest quite a spacious place, out of all proportion to its actual dimen-When you know what the photographs are wanted for, you can always tell whether these little exaggerations will please your customers or not. should be mentioned that when photographing small rooms, with a wide-angle lens, the camera should be kept low, not more than four or five feet from the floor. If this is not done, the floor will appear to run up in a most uncomfortable manner.

After you have settled on your point of view, and have fixed up your camera, you will nearly always be compelled to use your swing back, rising front and, if your camera is fitted with it, your swing front as well.

When a building comes too low on the focussing screen, the first thing to

do is to raise the lens by means of the rising front. This will help you to get the view correctly placed, but it may happen that you are unable to get the top of the building by using the rising front alone. Then you must tilt the camera. As soon as you do this, you put the plate out of the vertical position and introduce distortion. To get rid of the distortion you must use the swing back to bring the plate upright. Here the axis of your lens will not be at right angles to your plate. You can adjust this by means of the swing front, or you can secure sharpness by stopping down.

Now the question of exposure comes up. A very large proportion of architectural photographs—especially interiors—are underexposed. Always give plenty of exposure—be generous with exteriors and lavish with interiors. Poorly lighted churches, city offices, theatres, warehouses and rooms in old houses, often need an exposure running into hours. The best advice that can be given is to use a meter, and to take the time for the shadows, leaving the high-lights to look after themselves.

In very dark small interiors, you can help your exposures by burning magnesium ribbon, by flash-light, or by a portable electric lamp fitted in a bellshaped reflector. To use the electric lamp you must have a good length of flexible wire, so that you can carry the lamp to any part of the room. As soon as you have removed the cap, take the lamp in your hand, and turning your back toward the camera, walk backward and forward in a zigzag course, directing the light systematically over the whole room, giving more attention, of course, to the shadows than to the light parts. When a long exposure is being given in a room, you need not take any notice of people walking about. It is different when you are photographing in a busy thoroughfare. The best way to do this is to stop down the lens so that a long exposure will be necessary, then to divide up the time into small periods. If a total of ten seconds is required, you can make ten separate exposures of a

second each, choosing a time for each when there is a lull in the traffic.

It has just been said that, with interiors, if you expose for the shadows the high-lights can look after themselves. This is generally true, but there are times when it is necessary to cover up windows to get a more even distribution of light. When this is done the covering should be taken down after the

exposure, and a short exposure given to secure the detail of the window.

Little need be said about developing. Much of your architectural work consists in trying to overcome harshness. The best way to deal with harshness is to give long exposures and to use a diluted developer with a great deal less than the normal quantity of carbonate in it.—Professional Photographer.

CARBON PRINTING FOR PROFESSIONALS

By A PRACTICAL PRINTER

F the many printing processes extant there is none, I think, which should commend itself to the photographer, be he professional or amateur, through its many virtues, more than the carbon process. In none of the newer methods of producing positives from the negative are so many excellent qualities combined or such satisfactory results achieved, and yet many whose aim is to turn out the very highest grade of work do not use it at all, or if they do occasionally put out some few carbons they do not finish them in their own place, but send the negative out. Why this is I cannot imagine, unless it is through ignorance of one of the oldest, simplest, most permanent and most satisfactory of all printing processes.

I have frequently heard the process called difficult, intricate, fussy, by people who openly admired the results, but who were afraid to take up with it at all for those reasons, and I am glad to say that I have very often driven all such foolish ideas out of the heads of men who now glory in working in carbon and push it before their patrons as the very highest development of the photographic art; affording very great opportunities for individual taste and manipulation that more nearly approach the ideal in portraiture than anything else. Carbon, contrary to the general impression, is a very simple process, which, when the fundamental rules are mastered, will afford less trouble and

unlooked-for accidents than the albumen silver paper we used so long. It took a little time, we should recall, to make a proper silver bath, keep it in order, learn to float the paper just so and to tone and handle it properly. We did not learn all this in a day, yet any of us would now call the old way very simple, and that with justification. Still, the carbon process is not a whit harder to learn, and, once mastered, affords less opportunities to guess what is the matter when something goes wrong than albumen paper did.

We have a number of beautiful colors to choose from: the most absolute and undoubted permanence to insure the life of our prints; there is no other paper than can be said to even approach it in delicacy of rendering the gradations of our negative; and we do not have to keep the negatives thin and flat in order to make a good carbon. If one likes a good, old-fashioned negative, or has a number of them left over from the old days when we made negatives we could not exactly read the paper through, to put it mildly, let him try them on carbon; and, again, if he has none but thin ones and likes them thin, let him try those on carbon. It makes good prints from any class of negatives that will print at all, and therein it possesses an extraordinarily valuable future. Personally, I like a rather plucky negative with density enough in the face to produce a painter's value in the flesh, but

if I had to first use the plate for prints I should not hesitate to develop for printing, because I know that I can make a good carbon from such a negative as well as from one of greater density.

I think professional photographers would do well to devote a corner of their place—a whole room if possible to carbon working, not only for the sake of the greater profit which can be readily obtained on carbon work over any other, but for the reason that in delicacy, transparency in the lights, artistic effect and general attractiveness this process excels others and is the only medium with which can be expressed our very best work. It is certainly a product that increases the public's respect for a photographer, and even though the cost may be beyond their means, they would prefer to patronize a man who can turn out such admirable work; it stamps him a master of his art.

Another thing about carbon is its special beauty in large work. Beside a carbon no other enlarged work has the ghost of a chance, so superior is the carbon print from an enlarged negative. True, it cannot be made sensitive enough to make enlargements upon, except in the solar camera, but even though one has to make an enlarged negative when working from the usual cabinet size, it matters not, as a fully adequate compensation is charged and the work is all of the most interesting nature.

Taken from any standpoint, carbon possesses a character entirely its own, which cannot be equaled.

If professional photographers would only take it up boldly, they would, indeed, find that I have made no error in claiming its superiority over all other printing methods, in its ease, permanence and the recognition it will receive at the hands of the public. The only reasons there seem to be against it are its difficulty and the need of special facilities. Of the difficulty I leave the reader to judge after perusing the following simple directions. As far as special facilities are concerned, no photographer will endanger his bank account to any great extent in preparing to put out carbon work. A special room ought to

be set apart for carbon work, but at first, when it is being tried on a small scale, even that may be dispensed with.

One thing necessary in carbon work is scrupulous cleanliness; another point is that two things cannot well be done at once by one man. By that I mean to imply that the carbon worker needs to devote all his time and attention to his job, and not try to do a few carbons, a few prints, develop plates and make a bromide all in the one room and on the same day. No one should try to do such a diversity of things, anyway, but whether or no he can with other prints, he cannot with carbon, which, though easy, requires the worker to keep clear of all other chemicals while performing each stage of this process.

Materials and Equipment

It has been claimed that the carbon process is dangerous through the poisonous properties of bichromate of potash used to sensitize the tissue, but I can say, after many years intimate acquaintance with the process, that I have never had a touch of bichromate poisoning. If my fingers were cut or sore, I have used rubber gloves occasionally while sensitizing, but otherwise I have never taken any precautions whatever, so if one covers cuts or sores and carries none of the bichromate to the mouth. I should judge he might live to an unheard of age ere he succumbed to bichromate poisoning. If one could devote a room to carbon work after a fair trial on a small scale, I would suggest an ample sink be provided and the means of procuring hot water be close at hand. A large, well ventilated closet or box would be of service for drying the tissue, though that can be dispensed with. Such a box, however, is capable of being kept at a temperature which will dry the tissue in a given time in any weather, and it also keeps out dust, which is so apt to be flying about. The tissue while wet is very insensitive and could be dried in a dimly lighted room very conveniently if necessary. It is well to sensitize at night or toward the end of each day, so as to be ready with fresh paper each day; and if this plan is adopted one need not be particular about a closet to hang it in, though it is, nevertheless, very handy and is convenient to keep the stock in previous to use.

I should advise orange curtains for the windows and that the cutting table be in the darkest portion of the room. Beyond a stock of glasses to transfer from, racks to lean the prints on, a chest of drawers to keep various grades of paper in, and some tables, weights and a few chemical jars, the furniture of the room need receive no further attention. There should be a plentiful hot water supply, for water is the chief factor in the production of carbons, and if there be plenty of light racks to lay prints upon it will be a good thing, as one will soon find out in this work. Having the trays and sink large will be no mistake either, as one often wants to develop a considerable number of prints at a time. Wood trays with a plug in the bottom, so that the water can be let off into the sink at any time without tipping them at all, are as good as any, and they may as well be made to fit right over the sink. Trays 6 or 8 inches deep and 20 x 26 at the sides are of a very convenient size, and two will be more convenient than one. Many use tanks the size of the plate the transfer is made from to develop the print. They are exceedingly good, and perhaps aid in developing more rapidly than is the case when the plate lies flat. I should say that for transfer from plates, tanks are best, but for transfer from paper, trays are necessary, so that one must have the travs anyway and can do as he sees fit about the tanks. If tanks are used, be sure the sink is not too high, else it will be difficult to work in them at the sink.

The material required will be about as follows: A roll of carbon tissue, some ground opal glass, bichromate of potash, ammonia, flexible support, transfer paper, waxing solution, and printing frames containing a glass which has a black border all around. Lantern slide binder is excellent for safe-edging the glass.

Carbon printing is done in two ways,

single and double transfer. If single is used, either a film negative or a stripped one should be used, for otherwise the picture would be reversed and what should be on the right will be on the left, and the left on the right. By printing through reversed films we correct that and save one transfer. However, as single transfer is but little employed, I presume the majority of workers prefer the two transfers or double transfer to the trouble of stripping their negatives. When I have a goodly number to do, I find it worth while to strip my negative and print from the reverse side. This is accomplished by soaking the negative in a weak solution of formalin for half an hour, drying and then varnishing with a heavy varnish of liquid celluloid, and when this is dry revarnishing. Then when dry by cutting around the edge a corner can be raised and the whole thing peeled off. The celluloid varnish may be bought ready mixed or may be made by dissolving celluloid films with the emulsion cleaned off in acetone. For the sake of completeness and since many of the operations in single and double transfer work are identical, let us first take up single transfer.

We shall first have to make the developer, which is very simply accomplished by dissolving 3 ounces of bichromate of potash in 100 ounces of water for warm weather or 5 ounces of bichromate in the same amount of water for winter work. Test this solution with the hydrometer and keep it at the same strength at all times. To this solution add just enough strong ammonia to render the bath faintly alkaline. An acid bath affords tough, leathery paper, hard to manage and often very nearly insoluble, while an alklaline bath gives paper that works sweetly, develops readily and remains good several days in summer and still longer in winter. I have tried many, many baths for sensitizing, and can honestly say that no one could want a better working one than just a plain 3 to 5 per cent. bath slightly alkaline. This bath I like to use at a temperature of 50° F., and find no trouble in keeping it at about that by setting the sensitizing tray on



BY BARON AD. DE MEYER NEW YORK CITY



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cracked ice in summer and using in a very slightly (if any) heated room in winter.

The tissue comes in rolls 30 inches wide and 12 feet long. It is not always easy to unroll if dry, and if at all dry when received should be laid in a rather damp place a day or so before cutting I think it is well to cut an entire roll up into large sheets at once and keep the sheets between boards under slight pressure. Many prefer to keep the rolls in a tight box, in which a damp sponge is placed often enough to insure the proper limpness when unrolling. Whichever is preferred can be adopted, and there will be no difference. If sheets are cut, see that they are of a size that will afterward cut up to advantage without loss. Sheets as large as 20 x 26 can be handled easily, and I usually sensitize that size, though often when only a little of one color is needed I sensitize as small sheets as 8 x 10.

Manipulation

To Sensitize. Pour enough of the sensitizer into a tray of suitable size to fill it at least an inch deep (large trays should contain as much as 3 inches for comfortable work) and slide a sheet under the surface, face up if possible. If it has a tendency to curl, sensitize it face down, but it is better to have it in such condition as will permit of immersing the sheet face up, so that all air bubbles may be at once detected and broken with a glass rod. The time given by all standard authorities is until perfectly limp, and that is a good rule to go by. If about four sheets are immered one after the other, the first one in will be just about ready after placing the fourth one in the bath. usually takes a matter of three to four minutes to sensitize it, and in my practice I find that limpness is the best test. All should be given the same time, as we print by actinometer, and once we know how many tints to give a negative we are absolutely certain of all the rest so long as the paper is of equal sensitiveness. It has been claimed that paper left in longer than usual was better for certain negatives. It is certainly faster, but, as that is detrimental rather than beneficial, I advise all to adhere to the rule and sensitize until the paper lies limp and flat and no longer.

The belief that sensitizing in a warm bath for thin negatives was productive of better gradation has had its day the only difference is that it takes longer to print. I cannot find any better or worse rendering of half-tones on paper sensitized on 3, 5 and 7 per cent. baths. The 3 per cent. seems to be best in summer, the 5 per cent. in winter, and if the bath be constantly kept at this strength and the paper sensitized only till flat and limp, one will be certain of best results. After sensitizing the paper it is well to lay the sheets out on a large plate of glass, face down, and squeeze off all surplus sensitizer. For small sheets ferrotype plates are excellent, as the paper can be left on them to dry and will be found smooth and flat when dry. Larger sheets must be hung up to dry, just as albumen paper used to be after floating. One cannot always control the rapidity or slowness of drying and if the bath be kept alkaline and the same strength, I do not lay much stress upon the length of time the paper dries in. Many have held the opinion (as I myself once did) that too long or too short drying had various effects upon the sensitized paper, but I can find no difference between paper dried in a few hours and that which takes a whole day; so I have come to the conclusion that, after all, the time it takes to dry in makes no difference with the paper.

To Print

Carbon tissue is nothing but gelatin and pigment. After soaking it in the bichromate the gelatin becomes insoluble wherever the light touches it. Printing, then, is merely turning the gelatin containing colored pigment into an insoluble portion under all parts of the negative that the light strikes through. It is, therefore, not a printing-out process. We cannot judge of the depth of printing by examining it as we could P. O. P., and herein lies one of the chief fancied difficulties in carbon printing. "How can you guess the exposure?" so



BY THE MISSES SELBY NEW YORK CITY



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many ask me. I don't guess at my carbon printing. I know to a dot how long to print it, and can turn out ten thousand of exactly the same depth. This is done mechanically with an actinometer, each print having a measured quantity of light which once established is constant, and rain or shine, hot or cold, that tint number on the corner of the negative insures a correct print every time; there is no guess work whatever.

Actinometers with complete instructions can be had of dealers in carbon materials or one can be made easily. I use one I made by pasting ten strips of tissue on a 4×5 glass, each strip being $\frac{1}{2}$ inch shorter than the one first cut, and numbering each strip from 1 to 10. The carbon tissue I find to be about the same sensitiveness as P. O. P. (I can easily make it so by sensitizing in a bath of just such a per cent. as will produce that exact result), near enough anyway, as there is quite a little latitude in carbon printing; and if I print a small bit of paper under the negative till it is just proof deep I am pretty sure of having the right time—so putting a bit of paper in the frame and a long strip in the 4 x 5 frame containing the graded tissue paper (the actinometer), I place both out in the same light and bring both in when I wish to examine the progress of my print.

When my carbon negative is just proof deep, I open the actinometer and note the last tint upon which the number has printed. Say it is 7. I mark 7 on the corner of my carbon negative, and always in future know that seven tints will be exactly correct.

After a month's practice no one thinks of testing a negative any more than he would think twice about what exposure to give a plate on an average day. We take up a negative, look through it and say at a glance "six tints," or seven, or whatever it may require, and we know it will be right. All we have to do is to fill the frames, chalk the tint number on the edge, and put them all out with the actinometer, taking them in as their indicated tint is reached on that most useful implement.

To insure the adherence of the edges and prevent frilling, the safe edge is always used. Carbon workers generally edge each negative, but where a cut-out is not used it is better to have the glass in each frame edged with lantern binder, which will, it can readily be seen, obviate the necessity of safe-edging each negative. Each negative should be marked in one corner with the tint number found to be correct so that at any time an exact duplicate of former prints may be made without going to the trouble of making a test.

(To be continued)

SUCCESS

THE father of Success is Work. The mother of Success is Ambition. The oldest son is Common Sense. Some of the other boys are Perseverance, Honesty, Thoroughness, Foresight, Enthusiasm, and Coöperation.

The oldest daughter is Character. Some of her sisters are Cheerfulness, Loyalty, Courtesy, Care, Economy, Sincerity and Harmony.

The baby is Opportunity.

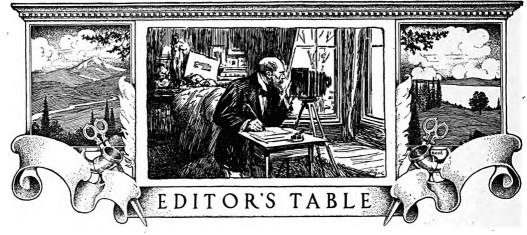
Get acquainted with the "old man" and you will be able to get along pretty well with all the rest of the family.

-THE OBSERVER.



BY MRS. G. W. SUTTON NEW ROCHELLE, N. Y.





TIMELY

HEN photography was in its first crude or infantile steps, business flowed naturally to the humble tent, wagon or refined city studio. Fairly rapid were the transitions in those days from the mournful black and white silhouette of our forefathers; from the daguerrotype, ambrotype, leather and tintype to the photograph which has endured, with some modifications, to the present time; it seems moreover to be a stayer.

Many of us can possibly recall the surviving picture of the Frenchman Daguerre, the inventor of the daguerrotype; he is represented sitting in an ordinary chair upon the back of which, his elbow resting, his head is supported. The early types of that process, by reason of iodin being the sole excitant with silver, required a very long expos-It is stated that Daguerre, who had been requested to sit for his portrait upon the roof of his laboratory, which was in the blazing sunlight, for better illumination, exclaimed, after fifteen minutes of this torture, while tears of physical as well as mental suffering coursed down his cheeks: "Pshaw, this art will never amount to anything!" He lived of course to see, through the efforts of his confrère Niepce de St. Victor and his own, together with the improvement in lenses, a spontaneous recognition of the art. The most elementary results in those days were (508)

appreciated and looked upon as little short of miraculous; they found a sale and at good living prices.

All this is now changed, and mediocre

work commands only a price commensurate with its quality. A public that received its education apace with the photographer began treading upon the heels of the very best workmen. For a time there was an era of almost nauseating sameness in the work of studios. The public could not accept forever the conventional monotonous posing, lighting and finishing. Given a picture or two at random from a hundred or more studios, cut off the names, and the col-

lection would pass for a "group" of

exhibition work from anyone of the con-

We are all aware of the

tributors.

causes that made this necessarily so.

The same formulas, plates, paper, mounts (Haven't we all given orders for cabinet mounts of from one to twenty-five thousand of just that color?), backgrounds and lighting were leading all to a uniformity of result. This was done by nearly everyone as long as the pictures sold; but there came a reaction and the tiresome sameness coupled with low prices was the cause.

The existing conditions, which we have tried to sketch briefly, together with some new blood and sinew, were responsible for what has been termed the new methods of photography. Minds unfettered by conventional work were better fitted perhaps for initiating a method unlike the then accepted work.

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There are, however, notable instances of old-time and professional photographers joining, nay, leading in the highly original and commendable results. The artist painter passed through just such a probation, and after using wooden mannikins and getting wooden results, employed living, breathing models. We have all heard of the collection of oil portraits by a rising young artist whose solicitous friends gave an exhibition of his labors by collecting as many as they could of his best, and when hung found that they were all in left profile view.

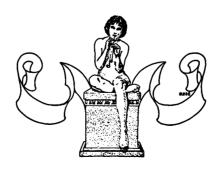
Grace and naturalness should go hand in hand, but in most studios nature is continually interfered with in the effort of following out the conventional and

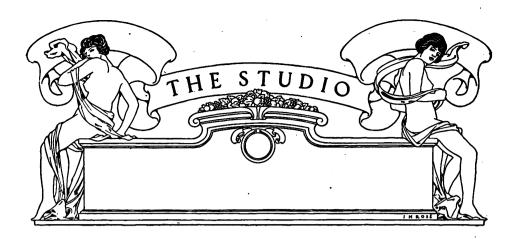
obsolete stock poses.

At this point it may be proper to add a few words that might clear the way for a betterment in output and increased income, for one must follow the other. A good many have been quick to see that a change was coming and was necessary, and are by this time well on the way and extremely happy over the result. No two workers adopted the same course; we cannot prescribe one for you, because the clientele you have cannot be known in every instance. If perhaps you will calmly look the situation over you may perceive that you have been working in a rut. Once this perceived, the way is easier. all know good from bad work, and, if

bad, the work must be improved. cessful conventions offer the pleasantest way out of the difficulty. Comparison of work; comparison of localities where so and so is successful with such and such work; your own ability in an artistic way; all this and much more is to be considered. The best journals, all of them profusely and beautifully illustrated. Note the names of the best workers, those that appeal to you most. Don't imitate, but digest well and make copious notes. Get perfectly familiar with all the different kinds of work. Do not condemn any accepted work hastily, for you might have to eat your own words on attaining more light.

Are you working under a good light, facing correctly? Do you light a sitter according to his requirements? Do you contrast your lightings with the proper background tones? For brilliancy, do you vary the distance from sitter to light? Is your chemistry as good as your skylight handling? After doing your best under the light does your darkroom work support you in that? Are you killing the life of your pictures by over-retouching, turning out baby faces on adults? Are you too indolent or too parsimonious to take a few extra steps and to use up a few more plates than just barely enough? Finally, are you paid enough for your best and most earnest efforts? Do you send your work out dainty, clean and neat? This is the age of refinement and cultivated taste.





PRACTICAL PAPERS ON STUDIO WORK AND METHODS

Random Jottings from Everyday Work

WE talk a great deal about fraternity, and we believe in it, too, but we are not above profiting by the misfortunes of our friends; that is all in the way of business and fair competition.

A few seasons ago a gallery two blocks away was to let, and it was taken by a travelling man who flooded the district with cheap coupons. He was open every day and all day, and he was prepared to supply thirteen cabinet prints

(510)

for ninety-nine cents. My trade was scarcely likely to run after the new man, for, in spite of what we are told, people can see the difference between ninety-nine cent and three dollar work; but I didn't believe in sitting still. I had just been to the convention, and I wrote to a dozen of the boys, including some that I didn't know personally. They all responded like good fellows, and I got a loan collection of fifty prints. There were some beauties among them, and my mouth watered with wishing I only could do as well. I hung my reception-room with these and with a few of my own, and I sent an invitation to every house of any size in the district. The invitation was a rough-edged, rough-surfaced cream card, about 4×5 inches, with the center sunk and pressed smooth, and the invitation printed on the smooth part. I have not one of them left, but the words ran something like this:

A Unique Exhibition

Our reception-room is filled with choice examples of the highest attainments in Art Photography, loaned by the leading galleries in St. Louis, Chicago, San Francisco, New York, Boston, and Philadelphia. You should see the platinotypes and the new colored carbon prints. They are in the highest style of art, and they are absolutely permanent. It is an all-star collection from leading Medalists. Remember, you are welcome.

The Studio, 572 First Avenue.

The whole thing—expressage on loaned pictures, printing, advertising, mailing and sundries—cost me about \$90, and all the money came back. I do not think the ninety-nine cent man hurt me any.

A good many years ago I concluded that a first-rate young woman in the reception-room was necessary. Next to cutting down the quality of work, cutting down the wage at the order desk is the worst of policies; and when I have good helpers I believe in letting them

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know that they are appreciated. My present lady has been with me ten years. I could save \$20 a month by changing her, and probably I would lose \$60 a month by the deal. To see her go to work you would think that an order was the last thing she was after; but she makes friends with everybody. She is always tactful in admiring a hat or a dress or a child. She keeps track of everyone who visits the studio, whether customers or not; in short, she has a head and uses it. It pays to keep good help, and it's a heap pleasanter.

I have a great fancy for always running some specialty. There need be neither risk nor cost in it, though I am rather apt to buy special appliances, and sometimes to drop money over them. Having a specialty doesn't choke off other work, but it makes people interested and brings them to the studio. Don't be afraid of dropping a leading line, when it doesn't lead any longer, and starting a new one. I am always using the latest things in mounts and frames. (I wonder if the mountmakers sigh for the days when mounts were either carte or cabinet, and were ordered in thousands?) But I alter the prints as well. Within the last seven years I have boomed platinotypes, carbons in one or two special shades, framed miniatures, bas-reliefs, specially vignetted full-lengths, blue platinotypes, and several other lines. More than one of them have proved failures, but I try something else. It is so easy to boom even a slight difference from

the everyday thing.
I believe there is only one time to keep alive, and that is all the time. I am always advertising, but I am not always spending money on it, though I do pay out considerable hard cash. I do not see the cash come back most of the times, but I know it does come back. This is how I figure it: I always have the money when I feel an ad. is necessary, and I have money for business and living. quit advertising and went to sleep I should have no money for advertising, and very little for food or materials. The sum seems simple. A man to be alive need not be shrieking all the time. He can go along quietly. An ad. does not work forever. It is something like eating. I pay cash for a square meal, and in a few hours it is more cash and another meal. I cannot get along any other way. So it is with publicity. I spent five dollars last week on printer's ink. That has done its work, and now another five dollars must follow it; only it must be well placed, so that it will not fall harmless on top of the other, but will hit in a new place. That is the secret of specialties—they strike in a different place, and to make every blow felt is the secret of success.

There is just one other thing to mention—the showcase or window. I have a fair-sized case, but whether case or window it should be kept clean. Mine cost me a fair price, and it is as near dust-proof as a case is ever likely to be; 'so all needed is to clean the wood-work occasionally, to clean the outside of the glass every day and to clean the inside of the case every second week, when I change the prints. An untidy or an unchanged window means that

people walk past without noticing it. They stop to look at a clean, fresh display.

Post-card Negatives

I HAVE found it very convenient in the many branches of photographic and process work one finds oneself grappling with constantly, to have at hand a good transparency of useful negatives, as in this case one can at short notice make new negatives, large or small, correct or reversed, at will. Thus I used several rather thin pyro-developed transparencies, reduced and masked to post-card size, to obtain reversed negatives for Sinop plates, and it will be sufficient to say that for this process it is only necessary to make the transparency and secondary negative by means of full exposure, as a thin detailed negative, without fog or stain, is what is desired.

Being asked for photo cards (e. g., glazed P. O. P. post-cards) from the same views, I was confronted both by the impossibility of including the whole of the half-plate view on a post-card, the necessity of masking and titling, and, finally, by the impossible slowness of printing silver cards from an ordinary negative. All these difficulties are overcome by the following method, which suggested itself from the use of the masked transparency made for the Sinop reversed negatives. I now print one hundred P. O. P. post-cards from ten frames in one hour, in full sunlight; and ten frames are as many as can be manipulated, keeping the printer constantly in quick movement.

printer constantly in quick movement.

To our method. The original negative is placed in the enlarging camera, focussed when reduced to post-card size, and a half-plate laid down after closing the shutter. A mask cut out of black paper, any shape desired, is now laid over the plate, and the exposure made. I use daylight as the luminant, and give an exposure of four to eight seconds on an orthochromatic plate, with stop f/11, at five o'clock in the afternoon. It is essential to place a black paper backing behind the plate. Friend pyro-soda does the rest, until the rather thin image almost disappears in the darkness of overdevelopment. The resulting positive should appear very weak by transmitted daylight, but clear and defined when viewed against the white ceiling of the room.

When dry, the transparency is titled (not reversed lettering) with black process ink by means of a fine mapping pen. Where the foreground is light enough, it is better to put the title on the picture.

It is now obvious that a correct or reversed negative may be obtained at will by changing the position of the transparency in the enlarging camera, and I need only say that by this means a reversed negative perfectly suitable for the Sinon process may be obtained.

For the Sinop process may be obtained.

For silver printing, the transparency is now reproduced exactly the same size, on an ordinary plate, giving about the same exposure under the same conditions as above. But the result will be observed to be by no means similar, for the negative will develop up more strongly, and first the masking will show through

the plate, and then the high-lights will quickly appear. The development should be stopped while the shadows are still white emulsion on the film side of the plate, care being taken only that the shadow detail is slightly developed When fixed in an acid fixing-bath, the negative will be of a ghostly thinness, and should appear black and clear against the ceiling.

When dry, a post-card is carefully adjusted for the margins, and a pencil run round the card to give a guide mark for placing the post-cards. Through such a negative the print may be seen quickly to redden in full sunlight.

they rarely left.

Landscape Photography for Publishing Purposes THE last two decades have seen a complete revolution in the aspect of view-publishing photography. Twenty years ago the houses devoting themselves to this branch of photography might easily have been reckoned on the fingers of one hand; today, if one accepts the small postcard publisher, they are scattered broadcast over the land. And the deus ex machina of this radical change is neither more nor less than that pestilential photographic flea—the postcard! Old-time landscape men might well hang in the wind when they saw their twelve-ten negative put out of action by a size that had never even been considered in the field. But so confirmed had become the habit of making negatives of large size in the field that for long after the advent of the postcard twelve-by-ten negatives continued to be taken, only to be numbered and placed in racks which

to hamper him, a postcard was $5\frac{1}{2} \times 3\frac{1}{2}$, and even to use a half-plate negative was to him a piece of wanton exuberance. So, in place of twelve-ten negatives, and a battery of lenses with focal lengths from seven to thirty and forty inches, landscape photography became a bagatelle of half-plate camera and single-focus lens. And the results were commensurate with the means employed; a practised eye looking over a series of views under the new régime could detect at a glance the shifts and devices made to satisfy the exigent half-plate and one-focus lens. Here a church with pinnacles barely included, but no foreground; there a wealth of foreground, and unobtrusively, almost apologetically, occupying the middle distance the town the card was intended to represent. The twelve-ten man took his photography seriously; he came to the district with impedimenta, and would probably spend a couple of days leisurely making himself acquainted with viewpoints. The more recent

The postcard publisher, per se, had no tradition

sees him finishing another place some miles away. Now if the methods of the twelve-by-ten man were made obsolete by the altered conditions, and they certainly were, those of the *modern* were inefficient. Rapidity in the field is desirable enough from a business point of view, but when it leads to hasty work—and it almost invariably does, especially in inexperienced hands-it is distinctly uneconomic, as the series

exponent appears in the morning on a bicycle, with the outfit partly at the handle-bars, partly on behind, and the evening of the same day

has no commanding sale, and is readily superseded by the first painstaking operator. If the ground is gone over deliberately and carefully, and pains taken to choose the most desirable view-points, with the most effective lighting of the subjects, then no need arises to revisit the place again for a long period, unless a few negatives here and there are required to keep the series up to date.

I have mentioned earlier that the majority of publishing houses years ago looked upon the x 10 negative as the most useful size, and while some houses employed this size for every subject taken, others took all subjects on 9 x 7 plates and 12 x 10 negatives only of the more important subjects. At the present time the 12 x 10 negative is rarely required in view-work, and its place may conveniently be taken by an enlarged negative made at home. The halfplate camera, except for pure landscape when only small sizes are wanted, is by no means a convenient size for all-round work; in architecture, especially in confined situations, it is the cause of much inferior work, particularly when coupled with only one lens. As an allround field camera perhaps no size has so much to recommend it as the whole plate (8½ x 6½). Its proportions suit it for architectural work, either upright or oblong; its size permits of either enlarged or reduced negatives being made of unexceptional quality; and it is not so heavy as to make a day's work laborious and slow. Added to which one does much more justice to one's subject with a plate of fair size

than with one necessitating lenses of short foci. And let me warn anyone desirous of doing their best for a series of negatives against any endeavor to accomplish it with a lens of one focus. To make the best of each view it is necessary to realize that there are certain features in it which are essential to it as a selling view, and that anything beyond is superfluous and detractive. To secure just these essential features and no more from a particular view-points demands a range of foci from which may be selected the one giving the required composition, and the greater the range of foci the better will be the quality of the view. My own camera is rather comprehensively fitted. When landscape work pure and simple is in hand, giving subjects over which one may be fairly deliberate, an old Darlot combination set, with a range of foci from three to thirty-six inches increasing by inches up to twenty, is my invariable companion, and though I have on many occasions tried to get away from it, as being effete and prehistoric, the luxury of its range is so tempting that I ultimately return to it.

If work in busy places, harbors, streets, promenades, etc. (where promptness is a prime necessity), is in view I make use of a sliding front carrying three lenses, narrow, medium, and wide-angle, mounted on it; registering marks are made so that each lens can be instantly centered. On the base of the camera are focus marks for each lens, which, with a view meter of good size, makes work both simple and expeditious. Inside the front of the camera is built a Cowan drop-shutter, and this is supplemented by a loose shutter for quick exposures should the necessity arise. With such an equipment I am able to deal with any subject in the minimum of time, a very great boon when working in places where the unwashed of the district decide for a

free sitting.

The rapid plate is so unquestionably the last word in modern photography that it smacks of retrogression to uplift one's voice in favor of moderate speed. All the same, I am convinced that anyone who employs plates of medium rapidity in view-work stands a much better chance of success; by medium speed I would imply plates with a speed-number of about 200 H. and D. With plates of extreme speed, overexposure and general flatness are a frequent result, particularly when open views are the subjects. For all-round work on orthochromatic plate of 200 H. and D., or thereabouts, leaves little to be desired; and I consider a good color filter combined with a moderately quick orthochromatic plate the landscape photographer's sheet anchor. The best place for the filter in my estimation is behind the lens, inside the camera, preferably affixed to a lever operated from the outside, so that at the last moment. when the slide has been inserted and the shutter withdrawn, the filter may be used or not according to the necessities of the case. It is wise to carry several color filters, as occasions frequently arise when very deep filters are necessary, as in hazy weather, but ordinarily a filter multiplying exposure about four times is the most generally useful.

I would here point out that in spite of the superior rendering given to a landscape negative by using a filter it does not always insure the most satisfactory negative from a commercial point of view. Suppose a general view is required, say, of a small Welsh town, from the side of one of the mountains surrounding it; the gray slate-roofed houses interspersed with trees are scarcely differentiated from their surroundings if a filter is used, and the town fits harmoniously into its environment; but without a filter the slate-roofs and houses are many tones lighter, and in a print the town is at once the keynote of the picture. The tonal values are depreciated, but the sales are much improved. Que voulez vous? The careful operator has aiways at the back of his mind the local stationer and view-buying public; even Orpen does not dare paint for himself when it's a commission.

This rather suggests a consideration of the class of subject most in favor. A young and ardent operator dropped down in—well. Bettws-y-coed, would find artistic subjects at every corner and accumulate in a very short time an extensive series of really fine views, which would probably scarcely repay for the expenditure. The wise old hand would select two or three dozen and see to it that he got the best possible negative of each. The Fairy Glen, Pont-y-pair, the Swallow Falls, etc.; those dear sheep the public gravely visit the conventional objective and order their views accordingly. Of one subject there is no manner of doubt, and that is of a general view of the place. Experience has shown that if there is failure in obtaining thoroughly good general views of whatever the locality may be the series will be most heavily handicapped when offered for sale. Many a series, poor in itself, has been largely sold because of the excellence of its general views. It goes almost without saying that they are the most difficult to procure, requiring invariably perfect conditions of lighting and atmosphere; yet when it is considered that upon these the bulk of the sales rest it can be well understood that they always have

premier consideration.

Every place visited by tourists has its stock show-places, and these are, as has been hinted, more or less good selling subjects. Since the coming of the postcard every street, building, stile, and lane has been laid under contribution by the enthusiastic publisher, and though small sales may at first result, such outside subjects have no permanent value, and practically never repay the time and trouble of taking and finishing. Even quite a large and important tourist center "works" but a small number of negatives, and the experienced photographer will gauge to a nicety just about how many negatives any one place is worth. Generally speaking it may be said that twenty or thirty negatives is an ample series for a moderate sized tourist center, but, of course, as one place usually overlaps another the sales will nearly always be from more than one set of negatives.

The system of work adopted in the field will be very much a matter for individual selection, but among the recognized publishers' operators there was considerable unity of method, and it was the result of hard and varied experience. The problem was to get as good a series as possible in as short a time as possible. To this end, on arriving in any district a day or two was spent in acquiring a working knowledge of the ground; the number of, and most popular, subjects, the best viewpoints, best time of lighting, etc. Having got a thorough grip of the work to be done the rest was a matter of weather. The first fine, clear day was devoted to the all-important general views; dull, overcast days to woodland subjects, interiors, and subjects generally not demanding actual sunlight. It might be thought that to devote a day or two to sightseeing and note-making was a prodigal waste of time, but let anyone try it carefully against the practice of plunging right into work, ignorant of subject, viewpoint, and time of effective lighting. With a carefully compiled table of views and hours of lighting it is possible on good working days to get from one subject to another in the radiant manner, and so accomplish a large amount of good work, without the vexation of turning up at some important subject and finding the time for taking it to have been some hours previously. If the photographer has a considerable and varied district to operate over he is to some extent independent of the weather, as he can very probably choose a place to suit the prevailing conditions; a spell of east wind would be fatal to work on Dartmoor or similar elevated district, but would scarcely matter in view work among the glens and wooded reaches of the Dart. Contrary to what might be expected, settled fine weather is altogether against successful, all-round landscape work; and no weather can equal "broken," showery,

even stormy, weather for fine effects and clear

Developing away from home is a question that must be decided by the individual engaged in the work. The best work undoubtedly results from developing en route, as in the event of a negative not being of good enough quality it can be retaken, whereas if development is deferred until the return home the best has to be made of what has been obtained. If only a short photographic expedition is made the development can quite well remain until the return, but when a tour extends over several weeks it is certainly wisest to keep the developing done up as occasion permits, either in the evening or on wet days. Should development be deferred until the district has been left it is a reasonable precaution to take duplicates of the more important subjects, varying the exposure. If over-or under-exposure is anticipated at the time of taking the negative it helps matters to mark the plates according, so that when they come up for development after a period of time has lapsed they may receive special treatment. My own plan is to take the adhesive self-edge of stamps and stick two of the perforated pieces on the back of the plate for underexposure and one for overexposure.

When development away from home is decided upon it is very convenient if the tank method is adopted, both for development and for fixing. Much cleaner work will result, and the problem of light-proof rooms is easier of solution. Washing after fixation may be somewhat perfunctory and finished on the return home. Sufficient impedimenta for developing whole-plates away from home may be packed in comparatively small compass, and if the tour is of any extent opportunities for developing are sure to occur, so that practically no diffi-culty prevents an operator knowing before he leaves a district just what kind of a series he

has obtained. However reliable the stand-camera may be for all-round landscape work, there is just one defect it possesses, which is its unreadiness for an emergency. Many times a striking view presents itself, owing its force to some accidental intrusion of outside objects, which is over before the standcamera can be brought into readiness for work. As many of these unforseen combinations are of excellent selling quality it behooves the view-maker to miss as few of them as possible, and I make it a practice to supplement the stand outfit with a small hand-camera which can be slung over the shoulder without making much addition to the total weight carried. The size is not of great importance, as the negatives will only be required to obtain reproductions from; a quarter-plate is large enough, though five-by-four is better; on no account choose postcard size, unless you wish tops of buildings, etc., lopped off. Films may be used, but as the negatives are wanted solely for reproduction purposes it is much better to use plates and be sure of getting quite clean negatives.

The practice of field-work set forth in this paper may seem to strike a distinctly out-ofdate note, in fact does; but for sound, efficient, and lasting work I believe the methods of twenty

years ago have still largely to be followed. would, I admit, be felicity itself, and rightdown smart, to tour the country with a motor-cycle and roll-film camera, which, to my knowl-edge, has been the method of several; but the results obtained by such a course would always, and do, smack too much of the holiday trip to have any lasting commercial value. If a series of views has to be made, deliberation and careful study must go to the successful making of them, and these two qualities are rarely carried on a motor-cycle.—G. T. HARRIS, in British Journal of Photography.

Re-sittings

THE question of re-sittings is one which perennially crops up, although we do not think that photographers have so much to complain of in these days as they had a few years ago. Probably the broader style of treatment which is now general has a good deal to do with it, while more intelligent and less mechanical retouching has also had an effect. Still, they are common enough to be reckoned one of the plagues of professional photography, and we have to consider the best way to deal with them.

In the first place, the operator will save himself much heartburning if he can bring himself to realize that the sitter does not usually intend to cast any imputation upon his ability. The old hand knows this, but the young artist is apt to take the return of proofs with perhaps rather a pointed remark or two as a sort of blow in the face, and either to contest the matter or to yield with rather a bad grace. That is quite the wrong thing to do. He should endeavor to see the matter from the sitter's point of view as well as from his own, and to do all that he can to give satisfaction. Personal recommendations are the best possible advertisements for any business, and a dissatisfied client will often be the means of diverting many profitable orders, while the assurance that polite and considerate treatment can always be expected will have the contrary effect. There are few people whose genius is so transcendent that they can afford to be ungracious, not to say rude, so that our advice is to stifle one's feelings and to accept an unpleas-ant situation with a smile. There are, of course, exceptions to this rule, and if the photographer can see that an attempt is being made to impose upon him there are good grounds for protecting himself against it.

It is not wise to mention the subject or to make any conditions as to re-sittings on any price list or even verbally at the time of sitting, as this shows a lack of confidence. If re-sittings are so frequent as to be a serious matter it is a sign that there is something wrong with the work, and a decided attempt should be made to remedy it. In many cases faulty or excessive retouching is to blame, and in others a want of attention to small details in dress or posing. Therefore, in every case it should be ascertained what the fault is before proceeding with the second sitting.

Various plans have been tried for avoiding loss in this way, but most of them are open to objection. One is to make a charge if any alteration is made in the dress or style of hairdressing. This

appears fair at first sight, but it puts an unpleasant restraint upon the sitter, who may have good reason for complaint, and who can see that certain modifications would help to secure the desired result. Another method is to charge a moderate fee for the sitting and a set of proofs, after which copies may be ordered at a fixed price each. This has its advantages, but as a rule, if the proofs are not quite satisfactory the sitter does not return, but tried another studio, so that it is a question of half a guinea sitting fee and no further order or a two or three guinea order with a possibility of a re-sitting at a cost of two or three plates, with perhaps an additional order at the end. In many studios it is the custom to destroy negatives which are not at once approved of, and if the sitter does not wish this to be done to charge a registration fee of, say, half a crown if they are to be kept. Occasionally a sitter will ask for this to be done, in case the second sitting is no more satisfactory than the first. It may be worth while to adopt this plan, but it seems to us that the fewer conditions imposed in an intimate business like portraiture the better

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After all prevention is better than cure, and every step should be taken to avoid the necessity rather than to remedy it when it comes. In the first place, we must remember that the average sitter has no clear idea of the powers of the retoucher, therefore rough proofs should never be submitted unless the negatives are really good and require but little work upon them. It is difficult to explain that this can be altered and that can be altered; the sitter is not so sure about it, and presses for a re-sitting which would not have been asked for if the alterations had been made We have noticed that those before proofing. We have noticed that those portraitists who do most of the work themselves are less troubled than the large businesses where it is carried on on more or less a factory system.

Another point is that sufficient choice of poses should be offered to the sitter. One of the most successful businesses has been built up on the principle of submitting six proofs for an average order. Some people have called this taking your re-sittings beforehand, but it is eminently sensible not only as helping to avoid a second trial, but because with so many positions to choose from the original order is in very many cases increased so that on the whole the additional outlay brings in a good profit. At the present price of plates this may not be regarded as advisable, but there is a wide margin between six proofs and the two which are often submitted.

Whenever it is possible the granting of a resitting should be done by the operator and not by the receptionist. The latter may be an excellent business woman, tactful and obliging, but she has rarely the artistic or technical knowledge which are necessary to decide the point. Moreover, the sitter enters the studio with less diffidence if the question has been settled with the person whom she considers is in fault. It should hardly be necessary to say that no proofs with which the photographer himself is not satisfied should be sent out without remark. In such cases it is well worth offering a re-sitting at once. It may not always be accepted, but if it is the sitter comes back in a pleasant mood, which is decidedly

helpful. All this is an old story to those who have spent many years in studio work, but we hope that it will go some way to smooth over a disagreeable side of life to those who are still young at it. In every walk of life we are open to criticism, and photographers should be thankful that they are not politicians whose incompetence we see denounced every time we open a newspaper.—British Journal of Photography.

Backgrounds

THE modern photographer regards the background of a picture in a very different light from his predecessor of twenty, or even ten, years ago. Then it was the custom to use elaborately painted scenes, which were supposed to be more or less suited to the social standing of the sitter. Usually they were highly incongruous, and we often found such combinations as a butcher-boy in a tropical conservatory or a lady in evening dress waiting by the banks of bonnie Loch Lomond. I well remember one enterprising firm who went so far as to have the entrance to Hyde Park accurately reproduced with real posts and rails for church parade sitters, and an interior of one of the salons in Buckingham Palace for court dresses. This sort of thing was borrowed from a certain school of portrait painters who considered it necessary to depict their models in what they considered an appropriate entourage. Fortunately we have changed all that, and the scenic background is rarely used except in the "while-youwait" studio, where it serves to cover up fingerprints and stress markings-in other words, it has almost entirely "retired into the background." The painter had one reason for introducing scenic effects into his pictures which does not apply to photography, for his subject being fully colored often called for a foil, a warm-toned curtain, or sometimes even a conflagration, as in some naval or military portraits being used to modify a rubicund complexion, while a delicate sky or light foliage served to enhance the charms of a blonde beauty.

The modern photographer has evidently taken a lesson from stage lighting, in which a concentrated light is often thrown upon the principal character, while the garish colors of the scenery are allowed to remain in semi-obscurity; and this has been all to the good as far as the artistic nature of the result is concerned. Many photographers now confine themselves to plain back-grounds. It is a safe course, although one sometimes feels that a little relief would often be acceptable, especially for half and full length poses. Hence a dark cloud or suggestion of foliage is often useful, as it allows the figure to show more relief by opposing a light portion to the shadow side of the sitter. There is one disadvantage in using this class of background because it is not always possible to bring the light patch into the desired position. This was overcome by a device, little known in this country, which consisted in having the background made in an endless belt running over two rollers, something like a roller towel, by which the height of any portion of the surface can be adjusted to a nicety. Such a background may carry foliage suggestions, clouds, and plain surfaces in various sections, as

the length of sixteen feet affords ample room. Another device for securing gradation was to have the ground made in the form of a shallow saucer, which gave a perfectly natural effect of light and shade just where it was wanted. Such a construction was found in practice to be too unwieldy for general use, and a more convenient way of carrying out the same idea is to have a tall screen made of narrow strips of wood glued to an ordinary plain canvas background of a medium gray tint. This can be placed so as to form a kind of alcove behind the sitter, more or less concavity being given as harder or soften gradation is required, or even be used flat, while when done with it can be rolled up and put in a corner. To make the method of construction quite clear, I will compare it to the roller shutter of a studio dark slide, the wooden slips being, of course, turned away from the sitter.

Tapestries and curtains form effective back-grounds if judiciously used, but neither the pattern nor the folds should be pronounced in character, only enough being shown to break up

the flatness of a plain surface.

The illumination of the background has an important effect upon its depth of color, and much may be done by turning it to or from the light, while the distance it is placed under the drawn blinds gives somewhat similar modifi-cation. Thus, to obtain the darkest effect from any given tint of gray, we keep it well back from the sitter and bring the edge nearest the side light as far forward as may be, the reverse being

done when a lighter tone is required.

In the case of white backgrounds for "sketch"

work it is usually recommended to light these independently by opening the blinds behind the sitter. This is all right in a dull light, but on a bright day the flood of light so projected into the lens is very likely to cause a general fog over the negative. Certainly if the quality of the work is to be considered it is better to secure opacity by Mr. Adamson's method of using red ink and seccotine on the back of the negative. A common error is to paint sketch backgrounds a bluish-white, the idea being that a denser deposit will be obtained. This is quite wrong; nothing can be whiter than white; the blue only masks any yellow tint in the distemper, and there is no gain by adding it.

From time to time attempts have been made to print in backgrounds from film negatives interposed between the portrait negative or to put in backgrounds on the back of the glass. These plans are rarely satisfactory, though in some cases excellent results have been obtained. As a rule, however, the general effect is not so good as from a background which has been photographed with

The materials used for backgrounds are various. For plain tints Melton cloth is excellent when it can be obtained. Failing this, distemper on canvas or stout sheeting is very suitable. For graduated backgrounds distemper may also be used, but it requires a considerable degree of skill to apply it, so that the necessary softness is obtained, and for this class I therefore prefer

1 "Sketch Portraiture," "B. J." Office, twenty cents, post free.

flatted oil-color, which does not alter in depth upon drying, and which can be easily worked and softened while wet. Aërograph work upon a plain gray distemper foundation answers very well, but it takes some time to cover so large a space. The aërograph is also excellent for subduing contrast in scenic backgrounds which are too contrasty. I have also improved such by rubbing on black chalk powder exactly in the same way as in finishing an enlargement, but care must be taken to avoid patchiness if there are decided brush marks on the surface. For small grounds up to 54 inches wide dark green or red serge is very good, and a little light may be introduced by dusting powdered French chalk on where required. This is easily removed with a clothesbrush if the plain surface is again required. If you wish to distemper your own backgrounds it is better to purchase one of the many ready-made distempers or to use the Kalko powders (Vanguard Company), which are specially prepared for this work. Oil-colors should not be purchased ready mixed; they should be procured "ground in oil" in a stiff paste, and this should be thinned down with turpentine or one of the current "turpentine substitutes."

Lincrusta and Anaglypta are useful for making imitation panelled backgrounds. The latter, being a kind of embossed papier maché, is the cheaper, but will not stand knocking about as

well as the Lincrusta does.

Now that we do not require so many backgrounds the old-fashioned multiple stand should be discarded and the material should be stretched upon light wooden frames fixed upon feet with castors, so that they may be moved about the studio easily and used at either end or diagonally, as may be desired. It is a good plan to have the ends of the studio finished so that they may be used as backgrounds. This has also the excellent effect of preventing the space behind the movable screens being used as a receptacle for lumber. The oak panelling comes in very well for this, and if the entire end be covered a large group can be accommodated without having to eke out the ordinary-sized ground with curtains, side slips and other make-shifts.

As a guide to those who are attempting to make or renovate their own backgrounds for the first time, I give the following hints: Do not expect to get an even surface with one coat of distemper. You may do so but, if not, do not be discouraged, apply a second coat rather thinner in consistency. If working on new canvas or sheeting it is a good plan to give a first coat or filling of thin size, or even starch or flour-paste. This prevents the distemper from being sucked into the material, and makes it easier to apply. For oil color, ordinary glue size is to be preferred. A large paint brush, about three inches across, is easier for the amateur to manage than the orthodox distemper brush, and should always be used for oil. Work quietly, and do not slop on too much color at once. A good gray can be made by mixing a little Venetian red and blue with the black and white. This looks warmer, and photographs better than black and white alone. Remember that distemper dries many shades darker than it appears when wet; therefore before using your mixed color try a patch on

brown paper and dry it before the fire; you will then know what your background will look like when dry. A very little white will turn black into a light gray. Do not buy black in a dry powder, as it is very difficult to mix; ask for black ground in water. Always strain your distemper through muslin before using, or else you will get streaks which are caused by unmixed particles of color which break up under the brush.

There is a right and a wrong way of nailing a background on to its frame. The wrong way is to fasten all four corners and then to go round the sides. The right way is to drive a strong tack in the middle of the top edge, then to pull the canvas as tightly as possible and drive another tack in the middle of the bottom; then fasten the two sides in the same way. Having got a

straight pull these two ways, begin driving in tacks about one and a half inches apart toward the corners, always working from the center. In this way any fulness is drawn out as you go on, and the background will be perfectly flat and free from wrinkles. It is a good plan to fasten a loop handle of iron or brass at each side of the frame; this obviates the necessity of handling the edge of the wood, and keeps the background in much better condition. If the frame is wider than you can stretch, a loop of webbing or cord, about eighteen inches long, should be fastened to one of the handles. Holding this and one handle, you can easily move an 8-foot frame single-handed, although if good castors are fitted it may not be necessary to lift it very often.-PRACTICUS, in British Journal of Photography.



VIEWS AND Reviews



The New England Convention

THE Twenty-first Annual Convention of the Photographers' Association of New England, at Springfield, Mass., September 9 to 11, proved unusually attractive to those in attendance and showed that the New England Association is forging ahead.

The demonstrations and lectures were well

carried out and thoroughly enjoyed.

Captain Edwin H. Cooper made an appeal for the Lieutenant Estep Memorial Fund, and \$169 were collected. Paul E. True, the Treasurer of

the fund, now reports a total of \$533.75, to date.

The Gold Medal Prize was awarded to A. K. Peterson, of Hartford, Conn., for the three best

portraits in the graded portrait class.

President Monahan was presented with a diamond and pearl stick pin by the manufacturers and photographers.

The 1919 Board of Officers were reëlected for 1920: President, W. H. Manahan, Jr., Hillsboro, N. H.; first vice-president, A. K. Peterson, Hartford, Conn.; second vice-president, Wm. A. Noetzel, Newton Centre, Mass.; secretary, Earl G. Mills, Providence; treasurer, E. A. Holton, Boston, Mass. State Vice-Presidents: Paul Jordan, Portland, Me.; J. R. Neville, Brockton, Mass.; Ira F. Lindsay, Manchester, N. H.; Lewis Oliver, Providence, R. I.; C. E. Shorey, Brattleboro, Vt.; W. E. Donnelly, New Haven, Conn.

The selection of the next place of meeting has been left to the incoming board.

Photography Department at The New York State College

PHOTOGRAPHY has been given recognition at the New York State College of Forestry, at

Syracuse, by a new requirement that every student and member of the faculty shall file with the college registrar a photograph of himself, standard size, to be included with the official record of the individual.

Not only has the college recognized photography in this way, but has taken a new step in its extension service by including a photographic department, to provide the public with pictures which show the work being done by the college, and to help educate the public visually as to what can be done to help beautify the State by improving its tree growth.

The photographic ruling has gone into effect with the current year, partly as a result of the military experience of Dean Baker, who was a captain in the army, where the photograph was recognized more than ever before in military life. The need for photographs was shown when efforts were made to compile the war records of the students, for a dozen made the supreme sacrifice, and 87 per cent. of the entire alumni, students and faculty entered the service. Pictures were lacking when an effort was made to compile data of those of the college who "went

The photographic work of the college will include snap-shot work of students in forestry problems, and a photographic department including negatives, prints and lantern slides has been installed in the Forest Library, which is probably already the best forestry library in America outside of that of the Federal Forest Service.

"The photograph is of value to the student," says Dean Hugh P. Baker, "for with a photograph at hand we can much better fix our memory of what a student has done with us than by card records, and when a prospective employer asks about a student who is suggested for technical work we can give a much more accurate estimate of the man than if we used figures of class standings alone."

The Fine Art of Photography

In The Fine Art of Photography by Paul L. Anderson (J. B. Lippincott Company, Philadelphia), every photographer can find something either to interest, entertain or instruct.

After reading the Introductory, however, some will wonder why Mr. Anderson wrote the book or gave it the title it bears. For, while he claims for photography the rank of fine art and presents a strong case, he holds that straight photography can only be regarded as craftsmanship, or at best virtuosity; yet he admits: "It is by no means intended to imply that the photographer should always modify the results given by his lens and plate, for it may happen that a direct photograph in which selection and manipulative skill are exercised will have all the suggestive power of the most carefully worked-out structure; but it is rare that this oc-curs." It will strike Mr. Anderson's readers that, if photography in and of itself cannot be made a means of high art expression, without the necessity of aid from other sources and means foreign to it, it fails in reaching the rank of art altogether, and that the term applied to this book is a misnomer. If, however, works of art can be produced by straight photography at times, although rarely, then photography is a fine art medium; and, if workers do not secure such results by straight methods, the failure seems to be the fault of those employing it, either through lack of skill, carelessness or a preference for some things outside of it. If straight photography has ever or once produced a work of art, it can be made to do it, in capable hands, often or always. The book would be better without the introductory, or at least if it had not re-opened the old discussion of straight versus control photography.

Mr. Anderson's work covers ground gone over often before; yet the different chapters are original with him and are superior to much previously written on the subject; for he brings to his task an experience and a skill not posessed by

all of his predecessors.

The chapter on Composition is unique and should be read extensively; that on Values, and the one on Suggestion and Mystery are good; Landscape Work and Landscape with Figures, etc., should be widely studied and applied; Motion Picture Work ought to receive the attention of every producer, director and movie star; Marine Work, which is in part written by Bertram H. Wentworth, the Mortimer of America, is especially interesting. To Portraiture is reserved the greatest space, and this feature will most attract the readers of the JOURNAL. The illustrations are reproduced unusually well, and the selections excellent for the text, as well as beautiful in themselves. The volume is well written and is worthy of a place among the best works on the subject it treats.

The Significance in Design in Picture Making in Photography

TENNANT & WARD have just issued their Photo-Miniature, No. 176, entitled, The Significance of Design in Picture Making in Photography. The author is John Wallace Gillies.

Design is one of the most important elements in pictorial photography. It is surprising how many photographers, professional and amateur, know little or nothing about it, and what little attention is paid to it by those who do. Where it is practised most is in some of the schools that teach photography; and there they go to the other extreme and make it the *ne plus ultra* of photographic knowledge and practice.

Mr. Gillies has given to photographers a book that is much needed, well written, and clearly illustrated; wherein is taught the applications and limitations of design; that is concise yet comprehensive; and the publishers have presented it in such form and size that it can be readily and often referred to, which should be the case until it is thoroughly mastered. We recommend the work to all who practice or are interested in photography.

Price, 35 cents-at all dealers.

An Unusual Catalog of Lenses and Shutters

One of the most complete and valuable catalogues for 1920 has just been issued by the Wollensak Optical Company of Rochester, N. Y., and will be of special interest to every professional and amateur photographer. It contains an excellent glossary of lens terms and other accurate information, besides a full presentation of the goods made by this well-known house, with illustrations from original photographs by eminent workers. A copy of this booklet will be sent on application or through dealers.

Photographs at The Metropolitan Museum of Art. New York City

The Metropolitan Museum maitains an extensive service for the public in which photographs play an important part. This work is arranged along three lines as follows:

1. There is maintained a reference collection of some 15,000 or more photographs of objects in this Museum and elsewhere of architectural

monuments, paintings, etc.

2. There is maintained an extensive service for the sale of photographs. This involves the maintenance of a complete file of prints showing objects in this Museum.

3. There are available a large number of photographs which constitute a lending collection.

The Museum makes and sells reproductions of all objects in its collections in various styles, including photographs, postcards, half-tones, and lantern slides. It should be noted that the catalogues of the collections are the catalogues of the photographs as well.

Various photographers and publishers reproduce paintings in the Museum collections, which may be obtained from them or from the Museum. Many of these publishers issue separate folders giving a list of pictures reproduced by them.

The Museum and the Detroit Publishing Co. make lantern slides from Museum subjects.

In ordering prints from the Museum, remittances should be made either by post-office order or by check on New York.

For further particulars address the Secretary of the Museum, to whom orders may be sent. HENRY W. KENT,

Secretary.

One-Man Exhibits at the Boston Y. M. C. Union Camera Club

THE Camera Club at the B. Y. M. C. U., 48 Boylston Street, Boston, has arranged a series of exhibits by the foremost pictorial photographers of this country.

Each exhibit will consist of about twenty-five

The club rooms will be open to the public every Wednesday evening from 7.30 to 9.30, and Saturday afternoon from 1.30 to 5.30.

No charge for admission.

November, John Wallace Gillies, New York City. December, Miss Margrethe Mather, Los Angeles, Cal. January, Frederick F. Frittita, Baltimore, Md. February, Ford Sterling, Los Angeles, Cal. March, Annual Exhibit of Work of Club Members. April, George Alexander, Chicago, Ill. May, Edward R. Dickson, New York City.

Photography Comes to the Rescue

A RECENT number of the Literary Digest was issued without compositors, either "hand" or "machine;" the whole magazine was typewritten (we may suppose with strong black ribbon), the pages photographed and plates made from those prints. "Thus," as the New York Evening Sun puts it, "what the Chinese call the noble human thought, darting full-equipped from the brain through the machine to the typewritten page, smiles at obstacles and takes a flying leap over the composing room upon the wings of the camera, landing at last in the stereotypers' kettle, and emerging to the news stands, just like that.

Here is a magazine, unique in process of manufacture, which strike conditions have been overcome. An encyclopedia was once issued in that way, but never a periodical until now.

Articles in Leading Periodicals

"The Air Brush in Photography." By Geo. F. Stone.

Abel's Photographic Weekly, October 11, 1919, p. 347.

"The Low Visibility Phase of Protective Coloration." By Loyd C. Jones.

Journal of Franklin Institute, October, 1919,

p. 507.

"The Influence of the Method on the Image

Tone in the Sulphur Toning Methods."

Chem-Zeit. Ubersicht, 1918, p. 116.

"Guide Negatives and Prints." By J. R. Hall.

British Journal of Photography, 1919, p. 491.

"Reducing Contrast."

British Journal of Photography, 1919, p. 465. "Construction and Standardization of a Simple Sensitometer."

Bulletin of Society Franc. Photo., 1919, p. 177.

The New Bausch-Lomb Optical Catalogue

EVERY photographer who desires to know more about the practical methods of how optical glass is made will get much valuable information from this manual and catalogue issued by The Bausch and Lomb Optical Company, of Rochester, N. Y. There is a brief historical review on optical glass, and a color absorption chart, with information of uncommon interest. Moreover, this manual is presented in excellent taste, the typography and illustrations of the highest character. A copy will be sent upon application.

Photographic Exhibitions.—A Suggestion

PHOTOGRAPHIC DICTURES are made to be seen, and this can best be accomplished, if they are to be seen by the masses, by exhibitions. while there are innumerable quantities of photographic pictures made, good ones and bad ones, there are comparatively few exhibitions (especially if compared to, for instance, paintings or drawings). Even these exhibitions are rather limited in their scope, being mostly for the purpose of showing artistic merit and sometimes, it is true, amateur work. That is very well as far as completed pictures are concerned; but it seems that there is still a great field for matters in the photographic line that as yet are hardly made subjects of exhibitions, although they would be most interesting and usefully instructive, and are of various natures.

It might be shown, for instance, how the resultant pictures are gradually arrived at in the different photographic processes, such as silver as a basis, platinum, carbon, gum, oil, bromoil, blueprint, etc., by displaying the metamorphosis from the beginning through all the stages to the final picture, as also the chemicals and material necessary thereto, and perhaps a short description of the processes therewith. In connection herewith some of the most important and frequent failures might be shown in pictures, this in advanced work as well as that of amateurs. It is just by mistakes and failures, that we learn most and get gradually perfected. From this a step further to the means of improvements of shortcomings, and it is here that, for instance, intensification and reduction could be comprehensively shown, the material necessary as well as the steps to be taken and the original faulty, the pictures obtained by the gradual steps and the final improved pictures.

A further interesting and instructive part of the exhibition would be to show the apparatus, such as cameras, their construction, parts thereof, and how they work. Also by respective pictures taken therewith, the different specialties and advantages of these kodaks and cameras and the limitation of their work. This also refers to the different sizes and kinds

of lenses which, of course, should also form part of the exhibit, with descriptions of their chemical and optical composition, of their manufacture and in their different stages up to and including the finished product. Also their oftentimes faults, limits and possibilities, as well as the resultant pictures produced by

Another part would be the accessories, such as tripods, connections therewith, backgrounds, certain chemicals and their objects, laboratory material, lightning sources and lamps, flash-lights, etc. As it is now, these things are only seen in photographic stores and cannot naturally be studied so completely or comprehensively as could be done leisurely in a well-ordered exhibition.

Scientific pictures would also be of great value, not only to show the possibilities and the accomplishments of fine pictures of such objects, but also for the interest they would create for the scientific study. Under this branch there might be mentioned astronomic pictures, eclipses of the sun and moon, total and partial, and if possible even pictures of stars and aggregation of stars; furthermore, microscopic arrangements with camera connections for taking such pictures, spectrum pictures, with the accessories employed for their production and any other interesting subjects desirable.

Another part may be devoted to show interesting pictures from the standpoint of the unusual or odd objects; that is, of things that are not seen everyday and are of special interest. Of what nature these may be cannot be foretold and must be left to individual conceptions of the producer, either from nature or from activities of man.

Moving-picture cameras and accessories will also form a very interesting subject to be displayed: parts of the cameras and description of the working parts, with demonstrations, lenses used, tripods, etc., projector and viewing apparatus.

X-ray cameras and lighting tubes as well as the necessary apparatus for making x-ray photographs, together with actual pictures to show the possibilities for the usefulness of x-ray

photography.

It would also be most interesting if it were possible to show in an exhibition the manufacture and production of photographic printing papers, acid plates and films, as well as emulsion compositions and making of same. Of course, it is well known that a good many processes are kept a secret by the manufacturers, yet it might be done in a rather general way, not going into details of quantities of chemicals used only to give a general idea of how it is done. This would go far in educating the mass of photographers and give them a better understanding of the whole subject of photography. It would not necessarily induce the photographers to make their own plates or printing paper; on the contrary, when it is seen how difficult and complicated it is to make them, they would undoubtedly remain patrons of the manufacturers. Of course, these things are

described in books, but practical demonstrations are so much more useful to obtain knowledge, especially if taken in conjunction with books.

So much, as to the photographic material, but even in the exhibition of finished pictures as well as to the methods of making them there is still a wider field it seems than what has been done heretofore. For instance, experimental work might be shown the means employed as well as the partially and entirely finished pictures in their different stages of completion. This might also apply to colorphotography, in which branch there are even at the present day known processes comparatively few picture exhibitions, which it is true, may be due to its being a specialty with comparatively few photographers yet if there were more comprehensive exhibitions it would stimulate interest and the desire for the advancement of this branch of the photographic art and also the possible improvements and new achievements to be accomplished, and that is just the purpose of exhibitions, to be a means among other things, to further photography.-JOHN LEWISOHN.

X-ray Photographs of Plants and Their Parts

The use of x-rays for revealing the inner secrets of the structure of the bodies of men and animals has long been familiar, but their application to the plant world is more recent. manner in which this is done was described by Dr. H. Rieder, in "Umschau" in 1916. An abstract of this article has just reached this country in a copy of the Neuste Erfindungen und Erfahrungen, from which we take the more important features. The author points out that great differences exist between the different parts of a plant (root, stalk, leaf, flower, fruit and seed) with respect to their content of mineral ash and consequently with respect to their power of absorption for Roentgen rays. The numerous mineral constituents of plants all appear clearly in the x-ray picture and the fact that even the most delicate structures of plants can be thus photographed bears witness that even those bodies which are apparently transparent to x-rays do absorb them to a certain degree which is governed by their consistence and thickness, their content of air and of sap, and their chemical constitution. Like other objects plants appear upon the photographic plate not as mere shadow pictures but in so-called "plastic" representations, i. e., giving an effect of three dimensions. Only the long waves of the x-rays can be employed to photograph vegetable structures, i. e., those which either come from a tube exhausted to a very low degree, or else a tube fitted with so-called Lindemann glass which is also quite transparent for rays of very great wave lengths. In this kind of glass those constituents of ordinary glass which have a comparatively high molecular weight, such as sodium, calcium and silicon are replaced by constituents having a lower molecular weight, i. e., by lithium, beryllium and boron.



The WORKROOM

ONTAINING THE LATEST PROCESSES, FORMULAE AND APPLIANCES NEEDFUL IN THE ART OF PHOTOGRAPHY FOR THE OPERATOR & WORKER

How to Develop Faintly Printed Prints Hints on Bromide Sepia Platinum and Sepia Palladium Papers The Printing Quality of Negatives The Use of Permanganates in Intensification Printing on Silk, Muslin, Etc. To Blacken Brasswork To Make Chemically Pure Blotting Paper Glazing by Squeegeeing Mounting Photographic Prints on Cloth Warm-toned Lantern Slides How to Prepare Photographic Solutions Effect of Impurities in Water Apparatus Repairs and Renovations Negatives for Planographic Printing Acetone Repairing Leaky Book-form Slides Photographic Materials and Processes Patent News



THE WORKROOM

By the Head Operator



How to Develop Faintly Printed Prints

For convenience of reference I have arranged, as far as possible, each operation and solution used, under their respective headings.

1. The Paper. The packets of paper contain-

ing the cut sizes are the most convenient to buy and use for this method of printing, because they are more likely to contain fresher paper than the tubes of paper sometimes do; especially is this the case when it has to be bought in villages or small towns, as the sale of the former is likely to be much larger than the latter. And the paper being packed flat is much more handy to use, or to cut to a smaller size, than if cut up from rolls of paper by the photographer himself. The slight extra cost of the packets of paper is made up in

other ways.
2. Printing. The printing need not take more than from one-tenth to one-twentieth (and often less) as long as printing right out would take. Print until the image shows faint detail in all but the highest lights, as much time is thus saved in printing, and overdevelopment is more easily avoided. Deeper printing than the above is quite unnecessary, but it can be carried on much

further if desired.

3. Artificial Light. It will be safer to fill the printing frames and to inspect the progress of the printing by artificial light, a candle or paraffin lamp being the best to use, although it can be done (with care) by very subdued daylight. But the development must never be attempted in a light of greater actinic power than that indicated above, or fogged and stained prints are sure to

be produced.

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4. Chloride of Silver Water. As previously mentioned, it is necessary to mix the developer with chloride of silver water, otherwise development of the faintly printed image cannot take place. The chloride of silver water should be made by artificial light in the following manner: The untrimmed prints to be developed are soaked for thirty minutes or longer in distilled or other purified water (moving them about all the time, as in toning), so as to extract all the chloride of silver from them that is possible; then pour this water off into a clean Winchester quart bottle, or some large glass receptacle, and apply a similar quantity of clean purified water to the prints, and proceed as indicated above, so as to extract as much more silver chloride from them as you can, and pour this into a clean bottle of similar size to the first one named; label the first bottle A and the second bottle B, writing under each letter chloride of silver water for developing P. O. P. prints. They must both be protected from actinic light by pasting brown or other non-actinic paper round them up to their necks (unless the bottles are made of non-actinic

glass), and by keeping them in the dark-room, in order to protect their contents from actinic light as much as possible; otherwise it may cause the pictures to be fogged or stained during development. As a guide, I may say that eight ounces of water will be a suitable quantity for washing the chloride of silver out of two prints $8\frac{1}{2} \times 6\frac{1}{2}$ inches; four, $6\frac{1}{2} \times 4\frac{3}{4}$ inches; or eight prints, 5×4 inches, or $4\frac{1}{4} \times 3\frac{3}{4}$ inches, if used in dishes suitable for the size of the prints to be washed, but the smaller the quantity of water it is possible to use, the better, because it will then be stronger in chloride of silver, which will be a great advantage, because it is to be used to dilute the concentrated developer with, and the more chloride of silver there is in it, the quicker it will develop. It is a good plan to wash any printed-out prints with as much care as to the quantity of water employed as if they were going to be developed; the chloride of silver water thus obtained is to be the developer with, for developing the faintly printed prints with. Pour the first wash water into the bottle labelled A, and the second wash water into the bottle labelled B. In fact, if printed-put prints are trimmed before toning (as they should be, in order to save waste of gold), and the trimmings added to bottle B, the chloride of silver they contain will help to strengthen it in the latter. After the bottles have been standing for some days, most of the chloride of silver will have settled somewhat, and is consequently much more concentrated near the bottom of the bottle; so about one-third of the water it contains can be carefully poured off and put into the residue tub or thrown away. By this means a much more concentrated solution (if it can be called a solution) of chloride of silver is obtained would be otherwise possible. When required for mixing the developer with, the bottle is well shaken, so as to equalize the strength of the contents as much as possible, and then the necessary quantity is poured into a clean glass measure; it is then poured into a clean glass dish, or a white celluloid or porcelain or other suitable developing dish. (I much prefer the former, because I find that the chloride of silver the developer contains acts upon the glaze of the porcelain, causing it to crack, and stains them, and the latter in turn often stain the prints during development.) Then pour the required quantity of the concentrated developer into the glass measure, and then pour the chloride of silver water from the developing dish into the glass measure, and then return the mixture to the developing dish, and the developer is ready This way of mixing the developer profor use. duces a clearer solution than the reverse way of mixing it would have done. But before develop-ing the prints they must be immersed in an acid

bath and well washed (see below, paragraph No. 5). After the prints to be developed have had the bulk of the chloride of silver extracted from them as described above, they are well but quickly washed in four to six changes of clean, pure water, all of which can be kept in bottles for future use, as first and second wash-waters for other batches of prints. By this method of working there is no waste of distilled or other purified water.

5. Acid Bath. The prints that are to be

5. Acid Bath. The prints that are to be developed are now soaked in an acid bath, or a combined acid, salt, and alum bath, in order to thoroughly clean the prints of all the stain or fog-producing substances that they contain, thus preventing them from being stained during development. But if they should sometimes get slightly stained during unusually long development, it (the stain) is generally invisible after the pictures have been fixed and washed; but if a slight stain should still remain, the cyanide of potassium bath, given further on, will remove it.

For convenience of working, mix up one or the other of the three concentrated solutions

given below:

I)				
Water					18 oz.
Hydrochloric acid-	-pu	re			2 oz.
]	Ξ				
Water					18 oz.
Chloride of sodium					2 oz.
Hydrochloric acid-	-pu	re			2 oz.
]	F				
Water					18 oz.
Chloride of sodium					2 oz.
Potash alum .					2 oz.
Hydrochloric acid-	-pu	re			2 oz.
For use, take of D,	E,	or	F		½ oz.
Water (pure) .				6 t	o 8 oz.

If the weather is hot, or the film of the P. O. P. tends to soften, blister, or frill in the acid bath made from the D solution, try to use ten to twelve ounces of water, or even more, instead of the six to eight ounces given, or make the bath from the E or F solution instead, which should prevent any possible chance of frilling, etc. Soak the well-washed faintly-printed prints from five to twenty minutes in the above diluted acid bath (but ten minutes is generally quite long enough), moving them about, as in toning, the whole time, so as to enable the solutions to act on all parts of them thoroughly. The solution is now poured off and thrown away, and the prints washed in at least four waters, so as to free them from the acid, salt, and alum, and from any soluble impurities they may contain. They are now ready to be developed.

6. Developers and Developing. I have had more success at present with acid developers, than with either neutral or alkaline developers, and found the two following concentrated developers work well when diluted with chloride of

silver water to the necessary extent:

Concentrated Acid Hydroquinone Developer

Water (distilled))				6 oz.
Gum Arabic (po	w	dere	:d)		60 gr.
Citric acid .			•		30 gr.
Acetate of soda				- } 1	to 1 oz.
Hydroguinone					60 gr.

First dissolve the gum Arabic in two ounces of hot distilled water, then add four ounces of cold distilled water, and then dissolve the citric acid and the other chemicals in the order given.

acid and the other chemicals in the order given.

The above solution works best when freshly mixed, but if not more than eight days old it will (when diluted as directed below) produce a developer that does not stain the film or the paper on the print, but stains very badly if it is much older. The above developer works well without the gum Arabic, but if the latter is present it usually renders staining almost impossible, but if the prints should be slightly stained, the presence of the gum Arabic in the developer renders it much easier to wash it out during the other operations than if gum Arabic had not been used. More or less gum Arabic than is indicated in either developer can be used if found necessary. If thought convenient, the above concentrated solution could be mixed up in larger quantities than indicated, but without the hydroquinone, which could be added dry, just before use, in which case it would keep in good working order for at least one month probably. I do not advise more than four prints to be developed at the same time until the worker has had considerable practice. The temperature of the room in which development takes place should not be under 60° F., and need not be higher than 70° F. If it is much below 60° F., the development is likely to take a long time, and this tends to produce stained prints. But any time up to two hours inclusive should produce stainless prints, but from four to fifteen minutes is about the time it usually takes to develop with the acid hydroquinone developer when freshly mixed, but acid ortol and some othere developers may develop more quickly. When a very quick-acting developer is employed, not more than two prints should be developed at the same time, otherwise a great many will be spoiled through being overdeveloped.

To develop two prints, $8\frac{1}{2} \times 6\frac{1}{2}$ inches, or four prints, $6\frac{1}{2} \times 4\frac{3}{4}$ inches, or eight prints, 5×4 inches, or $4\frac{1}{2} \times 3\frac{1}{4}$ inches, twelve ounces of developer should be ample, and possibly more could be developed in it than is stated, but the last few prints will take much longer to develop than the first prints did. A whole plate or 10×8 inch dish will be a suitable size to use for twelve ounces of

developer.

To develop, take:

Concentrated acid hydroquinone developer . . 1 to 2 oz. Chloride of silver water . . 10 oz.

When freshly mixed, it will develop in fifteen minutes or less, without staining the film or the paper of the print.

Concentrated Acid Ortol Developer

Water (distilled)		б oz
Gum Arabic (powdered)		90 gr.
Metabisulphite of potash		30 gr.
Ortal (Hauff's)		90 gr.

Mix in the same manner as indicated for the hydroquinone developer. The above developer also works much cleaner when freshly mixed. To develop, take:

Concentrated acid ortal developer 1 to 2 dr. Chloride of silver water . . . 6 oz.

At least one print, $8\frac{1}{2} \times 6\frac{1}{2}$ inches; two prints, $6\frac{1}{2} \times 4\frac{3}{4}$ inches; or four prints, 5×4 inches or $4\frac{1}{4} \times 3\frac{1}{4}$ inches, can be developed in the above quantity of developer. The development takes place very quickly, the average time being from three to ten minutes. The strength of the developer (and the time it is allowed to act) must be varied to obtain the amount of contrast desired in the prints. Prints from thin flat negatives may require stronger developers than those given, in order to increase their contrasts, for which the following developers may be tried:

Concentrated acid hydroquinone developer . . . 2 oz. Chloride of silver water . 6 to 8 oz.

or

Concentrated acid ortol developer 2 dr. Chloride of silver water 6 oz.

But prints from negatives having excessive contrasts, it will be better to develop them with a weaker developer, so as to reduce their contrasts, for which one of the following developers may give the desired results:

Concentrated acid hydroquinone 1 oz. Chloride of silver water . 5 to 6 oz.

٥r

Concentrated acid ortal developer 1 dr.
Chloride of silver water 6 oz.

Of course, the foregoing developers are only intended as a guide, and each worker must vary their strength until he obtains the effects he desires in his prints. Care must be taken not to overdevelop, and for this reason it is best to work with rather weak than strong developers, as they act slower, and are consequently more under control. The speed of development and the density are affected more by the quantity of chloride of silver that is present in the developer than the quantity of the developing agent it contains. In fact, the chloride of silver in the developer is the accelerator in the foregoing acid developers (for development cannot and will not take place without it is present in sufficient quantity), while the citric acid and acetate of soda (or metabisulphite of potash, as the case may be) act as restrainers of fog, while the gum Arabic or fish glue (i. e.—isinglass), when present, act as stain preventers and restrainers as well.

When the development is completed, wash the prints as rapidly as possible in at least two to four clean waters, and then immerse them for from five to ten minutes or longer in the following

Take of concentrated D, E or F solution ½ oz. Water (pure) 6 to 8 oz.

bath:

The prints are moved about (as in toning) all the time they are in this bath, the object of which is to remove or destroy the last traces of the developer, as well as any slight stains there may be, after which they must be well washed in clean water, in order to free them from acid and any soluble impurities the film or paper may contain. They are now ready for toning, and if the developer, acid, etc., has been thoroughly removed from them they will tone as quickly and as well as if they had been printed out and treated in the ordinary way.

Any of the toning baths usually employed for P. O. P., should work well, but I have used the following formula with great success for the last four or five years at least for both printed-out

and developed P. O. P. prints.

Stock Solution

Sodium acetate		1 oz.
Sodium bicarbonate		1 dr.
Water (distilled) .		15 oz.

The above keeps in good working order for at least twelve months.

To make the toning bath, take one ounce of the stock solution, eight ounces of distilled water, and one grain of chloride of gold. After toning well, wash as usual, and fix for fifteen minutes in hyposulphite of soda, two ounces to four ounces; water, twenty ounces. I use the latter strength unless it causes frilling, in which case I use it weaker, as indicated. Well wash as usual after fixing.

If any of the prints are stained slightly, or require reducing, the following solution will do it:

Cyanide of potassium . . . 6 gr.
Ten per cent. solution of
liquid ammonia . . 1 dr.
Water (distilled) 20 oz.

The stains, if any, will disappear in about five minutes, and slight reduction may take place also but a much longer immersion than this will be necessary in very much reduction is required. If distilled or purified water is not used for all the foregoing solutions and for all the different washings up to toning, success need not be expected, as I have found that when the prints get stained, the cause is usually to be traced to some impurity contained in the water employed for mixing the solutions or for washing the prints with. Unless some mistake has been made in mixing or using one or more of the solutions employed, impure water is usually the cause of failure, but non-success may be due to insufficient washing before or after developing, or both.

Hints on Bromide

Bromides must not be dried by heat unless previously hardened in formalin, 1 oz.; water, 30 oz.

To prevent blisters showing on a print, rub a sheet of ground-glass with French chalk, rub off, squeegee the print down to the glass and strip when dry.

A final bath of—Thiocarbamide, 90 gr.; alum, 90 gr.; citric acid, 22 gr.; water, 10 oz., adds brilliance to bromide prints by clearing the whites.

Yellowness of the whites may result from imperfect fixing or use of exhausted fixing bath, or one which is discolored by developer contamination.

A vigorous print may be obtained from a flat negative by normal exposure and overdevelopment. After fixing and washing, reduce in potassium iodide, 30 gr.; water, 10 oz.; iodine, 5 gr. Refix in clean hypo bath and wash.

An alternative method of intensifying prints weak from underdevelopment is: Bleach in copper sulphate, 100 gr.; bromide of potash, 100 gr.; water, 10 oz.; and develop in 10 per cent. nitrate of silver solution, 50 min.; water,

Sepia Platinum and Sepia Palladium Papers

I. A platinum paper free from mercury is made by coating a 50 x 65 cm. good raw paper, which is sized in the usual manner for the sepia process, with the following mixture.

Potassium chloroplatinite solution 1:7 3.5 c.c. Normal iron solution according to v. Hübl . 3.5 c.c. Lead-iron solution according 3.5 c.c. v. Hübl Potassium bromide solution 1:8. 2.0 c.c. chloropalladite Potassium 5 draps solution .

Development is effected with a potassium oxalate solution to which, according to the required tone, varying quantities of a "sepia solution" are added, the mixture heated up to 80-100° C. and then cooled.

Good results can be obtained with the follow-

ing formulas:

For warm brown tones:

Water			300 c.c.
Potassium oxalate			30 gm.
"Sepia solution".			50 c.c.
For bright sepia tones	:		
Water			200 c.c.
Potassium oxalate			30 gm.
"Senia solution"			100 č c

The "sepia solution" is prepared as follows: 130 grams citric acid are dissolved in 300 c.c. water in a liter flask and little by little 120 grams anhydrous sodium carbonate are added. As soon as the evolution of carbon dioxide ceases the mixture is heated on the water-bath. Then 21 grams ammonium chloride, 54 grams mercuric chloride and 2 grams of copper sulphate are added.

The solution keeps well in brown bottles. II. Sepia palladium papers must first be treated with agar-agar or arrow-root. Gelatin is not advisable. The following solution is used

for sensitizing:

Potassium chloropalladite	
1:14	10.0 c.c.
Monobasic ammonium phos-	
phate $(NH_4H_2PO_4)$	0.7 gm. 10.0 c.c.
Magnesium ferric oxalate sol.	
Cane sugar	1.5 gm.
Sodium chloroplatinate solu-	
tion 1:10	6 drops

For development:

Water .							500 c.c.
Potassium	ОХ	alat	е			50	–100 gm.
Monobasio	: a	mm	oni	um	pho	os-	•
					٠.		50 gm.
Glycerin							50 gm.

The tones depend upon the temperature of the bath.-R. JACOBY in Photo Korr.

The Printing Quality of Negatives

ONE of the most important points in professional photography is uniformity of results, and we think most workers of experience will agree with us when we say that if uniform negatives are produced more than half the difficulty is overcome. It may be taken for granted that the commonest variations are variations in printing strength or range of gradation-that is, negatives are made too strong or too weak for the process for which they are intended. That a negative shall have shadow detail, or, in other words, that the gradation shall commence with the recording of the darkest tones of the subject, is practically essential for every process, and is usually attained by any worker with a little experience. Sufficient exposure ensures this quality. The various steps in the scale of gradation must also be recorded, and this is to some extent a matter of correct exposure, but more a matter of excellence in the quality of the emulsion and liberality in the coating of the plate. The range of gradation, or difference between the light stopping power of the shadows and of the high-lights, is affected by several factors, but mostly by the duration of development. The "density" is usually estimated by the worker by transmitted light from the dark-room lamp, and it is in this exercise of judgment that the errors arise. If we can eliminate judgment, which is always liable to error, and work more or less mechanically, uniformity of result is more probable. Of all the points in photographic practice there are few more difficult than the estimation of density during development and the decision as to the correctness of the range or printing quality in the finished negative. If we could ensure absolutely uniform conditions our plates might be developed for a uniform time, and uniform results would be obtained. It is, then, easier to allow for the variation in certain factors, which, as we shall see presently, affect the range of gradation in our negatives, or to adhere to the old method of stopping development when, after a visual examination by transmitted light, we judge that sufficient density has been obtained?

We need hardly argue the value of uniformity in professional work. The amateur is often advised to try his negatives in various printing processes until he hits upon the most satisfactory result. This is another way of saying that the amateur is often unable to produce a definite type of negative at will. Obviously the pro-fessional who takes his order for carbon or platinotype, and his negatives must be made of a character suited to the selected process. How may this be done with the greatest ease and

certainty? Let us first of all consider what are the causes of variation in the range of gradation or printing quality of negatives, and to avoid complication let me consider the matter solely from the standpoint of portrait work in the studio. Variations in range of gradation may be produced by:

1. The contrast in the subject.

The brand of plate used.
 The exposure—i. e., so-called over- or under-exposure.

4. The constitution of the developer.5. The temperature of the developer.

6. The duration of development.

Taking the six points enumerated and examining each separately and from an every-day practical point of view, we may arrive at certain

conclusions.

1. The contrast in a portrait subject is largely under the photographer's control. An exceptionally strong light can be softened in the usual way by means of a diffuser, and the contrast may be still further reduced by means of reflected light. When the light is very weak and poor, however, the contrast in the subject may be too slight, and in such cases steps must be taken to increase the range of the negative. Overexposure must be carefully avoided, and development slightly prolonged. Negatives taken under such conditions are frequently intensified, a process always to be avoided, if possible.

2. The brand of plate used may be always kept to, and its characteristics and density-giving power become known. Any variations under this head would only arise from differences in various batches of emulsion, and would be so

slight as to be negligible.

3. If work is being constantly done under ordinary studio conditions exposure should furnish few difficulties, for the latitude of modern plates is such that half or double the normal or "correct" exposure may be given without the range of the negative being practically affected. As a rough guide to exposure it will be found that one second may be given for every minute a Watkins meter takes to darken to the light tint. The meter is placed in the position the sitter will occupy, the stop in the lens being f/6, and the plate of a speed of 200 H. and D. The subject is assumed to be an inch and a half head and shoulders portrait.

 The constitution of the developer must be kept constant. Stock solutions should be made up by careful measure, and not by guess-work, and the working solutions must also be measured each time. An important point to be observed is that sufficient sulphite of soda must be included to prevent any stain, even in those cases where unavoidable variations of other factors render it necessary to prolong development. As Mr. Chapman Jones has frequently pointed out, nothing is so uncertain in its effect upon the printing range as stain, which, it is safe to say, cannot be produced in uniform degree. It must not be forgotten that at summer temperatures a solution of sodium sulphide will deteriorate in as short a time as twenty-four hours, absorbing oxygen from the atmosphere and becoming sodium sulphate, when stain-preventing power is lost.

5. When we come to the question of the temperature of the developer we touch the weakest spot in the system we are advocating. Where

both heat and cold are greater, steps must perforce be aken to produce comfortable working Under any method of working, however, a low or a high temperature in the developing room brings its attendant evils. The dark-room should be so situated as to be not unduly exposed to the outside air or to the direct rays of the sun, and by some method or other it should be warmed in winter to a temperature of 60° F., and kept cool during the summer by proper ventilation. By hanging up a thermometer in the room the variation from the normal temperature—and 55° or 60° may be regarded as such—can be noted, allowance may be made accordingly in the length of development. One or two experiments will readily show what percentage of increase must be given when the thermometer falls 5°, and rises an equal amount. Some developers are more affected by variations of temperature than others, hydroquinone being almost inert at low temperatures.

6. The duration of development is well understood to be the principal factor affecting range—the longer the time of development the greater the range. If, however, the fog occurs, either through stray light, unsafe illumination of the dark-room, or an unsuitable developer, the fog may develop to such an extent as to cause a diminution of range with prolongation of development. Also, if the plate has been over-exposed, and potassium bromide added to the developer to counteract this overexposure, the darker tones will only be held back during the early stages of development, and the printing range may be lessened by carrying development beyond a certain point. That point will vary

according to the degree of overexposure. To summarize, we see that the plate and the constitution of the developer are two factors out of the six which may be kept constant. Where the contrast in the subject was very slight the plates would be placed in a separate box for development for an increased length of time-say, 25 per cent. longer. With this occasional exception the contrast in the subject is also a constant. Experience enables a reasonably correct exposure to be given, and by taking ordinary precautions we have seen that the temperature of the developer need not vary to any extent during the greater part of the year. It will thus be seen that exposed plates may be developed for certain lengths of time, and that negatives suitable for the various printing processes can be obtained with more certainty than by the old method of estimating density. The range of gradation for any particular process varies with The range of the make of paper employed or with the strength of the sensitizing bath, and the personal equation also comes in, for some workers prefer a rather stronger negative for a process than others. The following rough-figures, however, will suffice to indicate what may be done. Four plates, all exposed with approximate correctness, were developed in the same developer for six minutes, eight, twelve, and sixteen minutes respectively, and the resultant negatives were suitable for printing in P. O. P. or bromide, platinotype, black carbon, and red chalk carbon respectively.

We have been led to give more detailed consideration to this subject because we have quite recently had several cases brought to our notice where workers seemed unable in the ordinary way to get negatives which gave them the character of print their clients and they themselves desired. The method we have advocated is practically that in use in the developing machines which have been so successful during the past few years.—B. J.

The Use of Permanganates in Intensification

PERMANGANATE has changed its position nowadays, as far as intensification is concerned, and has evolved from auxiliary to principal. Thus we find that many years ago it was used in connection with an iodine method of intensifying; the negative was "bleached" in a solution containing 2 per cent. of iodin and 4 per cent. of potassium iodide, i. e., left until it had assumed a bluish-green tint; it was next immersed in a 3 per cent. solution of potassium permanganate, when the silver iodide produced in the first process caused the precipitation upon the image of manganic oxide. The treatment with permanganate was, however, only of secondary importance, the chief intensification being caused by the increased opacity of the partly rehalogenized image.

Some time ago the use of potassium permanganate was suggested with subsequent development with ferrous oxalate, the red deposit at first formed being decomposed by the oxalate, and manganic oxide or low manganese compounds being formed which gave the required

intensification.

By combining partial rehalogenization, however, with the action of permanganate, a better effect is produced and the result is an intensification which is of especial advantage in the case of underexposed negatives, as the details in the shadows are brought up in a most satisfactory

way.

The permanganate solution is prepared with hydrochloric acid, and, therefore, contains a small percentage of chlorin, as can be at once detected by its smell. The proportion of permanganate to acid may vary from 2:2 to 2:1, the latter being most satisfactory.

Permanganate Bath

Potassiun	n pe	rma	inga	anat	te	2 gm.
Hydroch	loric	aci	d (c	one	:.)	1 c.c.
Water						100 c.c.

The negative, after having been thoroughly washed, is placed in this bath for a period between one and three minutes, during which time the image is transformed into a reddishpink, and apparently loses very much in density. The clear portions become chiefly discolored, but no chemical effect seems to take place in them, as on subsequent development they again become clear and white.

A short rinse only, in water, is advisable between the use of the above bath and redevelopment; too long washing appears to lessen the

intensification.

Any organic alkaline developer may be used, but hydroquinone with caustic soda is recommended. The red plate, when immersed in the developer, quickly becomes brown, and finally black, and as already stated, the whites again become perfectly clear. A short washing in water concludes the process.

water concludes the process.

The effect on gradation, photometrically estimated, is fairly even, but contrasts are slightly

reduced.

Printing on Silk, Muslin, etc.

Answering an inquiry from a correspondent we give the following formula for printing on silk, muslin and other fabrics which is highly commended by those who have used it:

Water				10 oz.
Common salt				100 gr.
Gelatin		_	_	20 gr.

Dissolve with heat and uniformly moisten the textile, which may be conveniently stretched on a frame. When dry, moisten with a solution of silver nitrate, 40 grains to the ounce. The material being once more dry is ready for printing, toning and fixing as for prints on albumenized paper.

To Blacken Brasswork

CLEAN off the old black with fine glass paper or emery and polish with tripoli; then use the following preparation: Dissolve forty grains of silver nitrate in one hundred minims of distilled water; also dissolve forty grains of copper nitrate in one hundred minims of distilled water; mix the two solutions. Dip the stops in this mixture and let them dry. When dry they should be heated on a sand bath until they assume a fine dead black color. Another simple method is to make lampblack into a paste with gold size, and add just sufficient oil of turpentine to make it thin enough to use with a camel-hair brush, then paint the stops with it.

To Make Chemically Pure Blotting Paper

Ordinary white and colored blotting papers contain notable quantities of sulphites which have not been perfectly washed out of the pulp before passing to the machine. These bodies are added to the pulp after bleaching to get rid of the smell of chlorin, hence they are called "anti-chlors"; and generally consist of sulphites and bisulphites of soda. Their presence in papers which are used to dry photo prints is fatal to permanent results. It therefore behooves us to discard the use of common papers for such purposes, unless specially treated to remove such impurities. The following tests will enable anyone to judge as to the suitability of the various papers offered. Acidity: Take a piece of the paper, six inches square, place in a saucer, and pour over it distilled water, and work about with a glass rod for five or ten minutes. Now take a blue litmus paper or a little tincture of litmus and test extract, when if either turn red it shows presence of acid. Divide the extract into two parts; to one add a few drops of nitric acid, then nitrate of silver solution, when if a white, curdy precipitate is formed, it proves the presence of hydrochloric acid or chlorides. To the second

portion add a few drops of hydrochloric acid, heat to boiling in a test-tube, and add a solution of barium chloride; a white precipitate indicates the presence of sulphuric acid or sulphates. Sulphites: Take another piece of the paper, same size as before, and extract with water, and divide solution into two parts; now prepare a solution of starch, made by boiling four or five grains of starch with an ounce of water; allow it to cool. Get a little tincture of iodin, and dilute it five or six times with water, then mix equal parts of the starch solution and the dilute iodin solution, when an intense blue color is produced; add a drop of this blue compound to one of the water extracts of the blotting paper, when if sulphites be present the color will be instantly discharged. Add to the remaining portion of the extracts a few drops of silver nitrate solution, when a black precipitate will be formed on heating, if any sulphites or hypo-sulphites be present. To free blotting paper from all impurities likely to injure silver prints, place the paper in a large developing dish, and flood with boiling water three or four times, then with a dilute solution of carbonate of soda, and again with hot water, washing free from soda; hang the paper up to dry. When dry it is ready for use.

Glazing by Squeegeeing

In their Trade Notes for September, Messrs. Rajar, Ltd., deal with this subject, pointing out that the finest gloss is produced by using glass as the support, although pulp boards and ferrotype plates give quite good results. The old way of cleaning the support, applying French chalk and polishing it off again, entailed considerable labor, and sometimes resulted in prints being spoilt by sticking. There are other methods, such as applying wax or petrol mixtures, but none are so successful or so easy to work as the liquid glazing solution so largely used by postcard publishers, etc. This is extremely simple to use and absolutely certain in action.

A little of the solution is rubbed on the previously washed support, the wet prints are then placed face down to the support and squeegeed. When a large number of small prints have to be glazed, it is necessary to use a piece of sheet rubber cloth a trifle larger than the support. After the wet prints are put in position on the support, the cloth is wetted, placed over the prints, and a flat squeegee applied, rubbing lightly at first to remove superfluous water, and finally giving two firm strokes commencing at the center of the cloth. The cloth is then gently peeled off, the support with the prints which it bears is stood on end to drain and then placed in a current of air to dry. When they are quite dry the prints can be easily peeled off and may then be placed under a weight to keep them flat.

The only failures likely to be met with are (a) air-bells due to insufficient pressure in squeegeeing, and (b) particles of dirt or foreign matter in the water that is used for cleaning the glass. The latter defect can be avoided by passing the squeegee over the washed glass before applying

the glazing solution.

Mounting Photographic Prints on Cloth

A PHOTOGRAPHER employed on big contract work where only a certain amount of money could be paid for photographing, cast about him for a means of increasing his income without decreasing his usefulness to the company. The work to be got must be of such a nature as could be done in spare time. He finally hit upon mounting prints on muslin as the best thing to do. From an extensive experience in doing the work he knew more about it than "the other fellow"; the equipment was simple and at hand, while the work could be done lunch hours, etc.

The conditions for doing the work being favorable, he reasoned that many people having accumulations of photographs want them put into a shape they can be made use of. The first thing to do was to get up samples and make prices. These samples included both glossy and mat-surfaced prints in the various grades and kinds of paper he expected to find. Some were mounted on cloth plain; others with flaps to bind them into books, and some were backed up over the cloth with paper to give them "body." Taken as a whole, they made an attractive showing, for the sample prints mounted were an interesting lot.

The next question was to market them, i. e., get the work to do. By showing them in the office, \$60.00 worth of work was secured. This being disposed of, outside work was gone after. The soliciting was done both by letter and personal application. The latter way was the best, for then there was no money expense to speak of and an acquaintanceship was established, meaning the getting of other work to do when he could do it.

Here is how he did the work. Materials needed for the work:

A number of sheets of ground glass, larger in size than the prints to be mounted.

Ferrotype tins of good quality, larger in size than the prints to be mounted. (These in sufficient numbers.)

A broad paste brush.

A quantity of excellent paste.

A good print roller.

A quantity of good-quality, soft-finished muslin. Glycerin.

A tray to put the prints in to soak. (You mount wet.)

A broad squeegee. Benzine and paraffin.

An electric fan (if obtainable).

A letter-press large enough in size to take the prints and blotters.

Photographic blotters.

Pencil, rule, sharp knife, transparent draftsman's triangle and print-trimming machine.

The prints are soaked before mounting in a solution of one part glycerin to 30 parts water. I usually dry my prints first so that they get the full benefit of this solution, which is used as a means of keeping them flexible after being mounted. The prints stretch in the wetting, so I allow in trimming for it. My 8 x 10 prints I make short $\frac{1}{8}$ of an inch the long way and $\frac{1}{16}$ the short way.

If your prints are of sufficient size you can

often adopt a standard size a little smaller than the plate size for your finished work. I make my pictures taken on 8×10 plates, $7\frac{1}{2} \times 9\frac{1}{2}$. If they are only to be mounted and not to be bound in books I do not trim them before mounting. If to be bound into books, I have a piece of cloth and plain paper project over on the left-hand (bound in) side of the print. The piece of paper should be of the same weight and quality as the print. Leave only $\frac{1}{16}$ of an inch between it and the print when both are placed on the glass ready to be pasted; have the paper half an inch or so wider than the flap is to be.

To mount, place enough of the glycerin and water solution in the tray to cover the prints. Allow them to soak in this solution until thoroughly wetted. Then take a print out of the water and place it face down on top of a piece of ground glass, if a mat-surface or a ferrotype tin, if the print be glossy. Place it to the right-hand side of the piece of glass, etc., with the lower edge toward you. At its left-hand side, place paper if you intend to bind. After draining, squeegee the water from the print, working outward from the center to the sides. When all the water possible is gotten rid of this way, rub the back over lightly with a cloth to remove all surface moisture and to insure proper contact of the

print to support.

Next apply the paste practically all over the print and support. Do this evenly and do not hurry to mount the cloth on the top of it. The next thing after pasting is to place a piece of muslin on the print, etc. This should be large enough to overlap a little all around. Rub this down with your print roller, using a flat object like a coin to get out any bad ridges. As a rule, moisture will show at the place beneath the cloth where the edges of the print come. After mounting set up to dry. This can be either spontaneously or in the draft of an electric fan. In drying, the main point is to manage to have some moisture left in the print when they come off their support to go under pressure. In fact, I watch them carefully and pull them off often before they become quite dry. When they show an inclination to curl off in part you can try pulling them off. Also feel the back with your hand to see if it seems dry. In ground glass work they usually show the grain of the glass when looked at on the reverse side. When you cannot see the view well, they are dry enough to come off.

Be sure that the surface of the print is not wet enough to stick before putting it between blotters, the next step. Place a blotter down, then a print on top of it, then another blotter, then another blotter, then another blotter, then another blotter, then another print, etc., until all are placed thus. Put extra blotters top and bottom before putting into the letter press and applying pressure. Leave them in the letter press under pressure for twenty-four hours. Longer is better and it is well to change the blotters for others, and drier, when you think of it occasionally. Putting dry cloth mounted Velox prints under pressure to flatten and at the same time putting others more or less damp in the same press and pile of blotters, means having your prints wrinkle at the edges. A piece of thick card-board placed between the two lots will prevent this.

In trimming, measure in two places to the right from the left (trimmed edge) placing marks with a pencil to act as a guide for your straight edge when you come to trimming with a sharp knife. The transparent triangle I use as follows: Suppose I have a building in the view. Then I place the edge of the triangle on a line with a straight line in the picture, and the other forms a rule to mark where to trim the edge of the print. The reason I trim off the right edge first is because I use it as a guide to trimming the others in the trimming machine. I place a ruler over the print near the edge to hold it down when

I cut in the trimming machine.

If the prints are to be bound in a book allow enough more of the print on the flap end to make them all come out even on the outside when bound. This little addition to the flap makes the whole piece (print and paper end) equal throughout the collection. Thus I have saved trimming a lot off the end of some prints where a few in the number were shorter in length than the rest.

This is hardly noticeable when bound.

If desired you can back your prints by pasting over them again, after the cloth has been rubbed

down, and mounting paper on them.

To prevent the prints from sticking to their support I rub the ground glass or tin with a solution of benzine, in each ounce of which 10 grains of paraffin has been dissolved. This is rubbed off as well as possible and then the surface polished with a clean rag. Prints mounted on cloth or glass that has not been used before for mounting do not come off of their own accord. The pasting at the margins seems to hold them on. Such prints must be put under pressure while still moist to flatten properly.

To clean the glasses, etc., before using over again have a tray filled with an alkaline solution of hot water (hot water and "Gold Dust," etc.), at one side of the sink. Put a first glass in this to soak and each time you take one out to rinse under the tap and scrub with a nail brush, put another one in. This soaks until you are ready to handle it. By placing something at the bottom of the tray you will prevent them sticking and make them easy to raise. Stand up on end to drain and then dry with a towel. After waxing, pile up ready to use again.

After the prints have aged in books they flatten considerably and stay flat. They should be kept under pressure when not in use. Whenever possible it is advisable to back the prints

with paper.

In cutting up the cloth, I get it into the proper sizes by cutting, not tearing it, for the tearing stretches it at the edges. I have not found any difference in its being cut across the weave or in the length of the bolt of cloth.

After the mounted prints are taken out of the blotters they curl up in the air. They can be drawn under the edge of a ruler so as to make them less liable to curl.—D. G. A.

Warm-toned Lantern Slides

Blue Tones. Although there are several processes for producing the tone of a ferro-prussiate print, the most certain in the writer's experience is also the simplest, but the process considerably

increases the density of the slide, and therefore calls for some considerable practice before it is easy to hit the exact point at which to stop development. Added to which, there are not many subjects for which a blue color is suitable.

Ferric ammonium citrate, 10 per	
cent. solution	½ oz.
Potassium ferricyanide solution,	-
5 per cent. solution	½ oz.
Acetic acid, 10 per cent. solu-	_
tion	5 oz.

The high-lights of the slide become tinted with the ferri-cyanide in the course of toning, and the washing must afterward be done until the color is removed. This will leave the slide a deep Prussian blue, for which, unfortunately, there is not a satisfactory reducer to correct too great vigor. Hence the need of having the slide of the

right density to start with.

Which Process to Use. It remains for me to say a few words as to which of these methods the slide maker will be wisest to select. My advice is to master first the copper and sulphide processes. The others have their places, but with these two at his command the worker will be able to produce a range of colors which should enable him to carry out his ideas as to the fitness of any given subject for a particular tone. Of the two, the sulphide is to be preferred for its richness and transparency in the shadows, though it has not the variety of effect possessed by copper. Next in order of preference I should place the haloid toning methods, and last of all the processes in which mercury is used.

the processes in which mercury is used.

Warm Tones by Development. I can now come to the first of the two methods for obtaining warm tones mentioned in the earlier portion of this article. The method consists in strongly overexposing the lantern plate and developing with a greatly restrained solution. In adopting these processes a slow lantern plate should usually be selected. Many makers supply a rapid and slow brand of plate, the former usually for black tones especially. The slower plate is usually the one on which the warmer colors can be most easily obtained. As a developer, either pyro-ammonia or hydroquinone is suitable. I may, perhaps, first give a pyro formula for warm black tones, but for browns and reds the worker is advised to pin his faith to hydroquinone.

Pyro-ammonia for Warm Black Tones

Pyro	:	40 gr. 120 gr. 40 gr. 20 oz.
В		
Liquid ammonia		160 min.
Water		20 oz.

Equal parts of these two solutions are mixed together, a fresh batch of developer being used for each slide. With a fairly full exposure about twice that given with a normal developer, this formula will give slides of a beautiful rich, warm, black color.

For hydroquinone development there are a number of good formulæ on the lines of that published. One of the best in the writer's experience is the following:

Α	
Hydroquinone	½ oz.
Sulphurous acid	₹ oz.
Potassium bromide	60 gr.
Water to	20 oz.
В.	
Caustic soda	$\frac{1}{2}$ oz.
Potassium metabisulphite	120 gr.
Water to	20 oz.
С	
Ammonium bromide	1 oz.
Ammonium carbonate .	1 oz.
Water to	20 oz.

The normal developer, doing its work in two or three minutes, and producing a black-toned slide, is compounded of—A one ounce, B one ounce, and water two ounces. For tones of various degrees of warmth, an increased exposure is given with proportional increase of the ammonium carbonate and the ammonium bromide. The following can be given as a guide to the times of exposure and development, it being assumed that the negative is one which will give a good slide a black tone in about thirty seconds. For brown tones expose about one minute and develop for about five minutes in the following: A half an ounce, B half an ounce, C 100 minims, water to two ounces. For a purple brown exposure may be about one and a half minutes, and the developer be made up thus: A half an ounce, B half an ounce, C 200 minims, water to two ounces. Development in this case will occupy about five minutes. For purple and red tones the exposures should be about three and five minutes respectively, and the developers made up according to the following formulæ: For purple, A half ounce, B half ounce, C 250 minims, water to two ounces; for red tones, A half ounce, B half ounce, C 300 minims, water to two ounces. Development for these warm tones will have to be done a good deal longer than for the preceding ones, and an average time will be found to be from ten minutes to a quarter of an hour. There are two points on which care should be bestowed in working by these methods. The first is that the ammonium carbonate should be pure and freshly purchased. This substance does not keep very well, and if it is not in clear pieces, but has a white incrustation upon it, a proper sample should be obtained. The second point is that a slide of warm color contains the silver in an extremely fine state of divisions, and is therefore exquisitely sensitive to chemical treatment. For example, it will be found that too long an immersion in the fixing bath will weaken the slide, and the slightest touch of reducer will remove it altogether. In fact, the writer is not aware of any satisfactory process of reducing a too dense slide of warm tone.

How to Prepare Photographic Solutions

Purity of Chemicals

The Water Supply. Water is the most important chemical used in photography, and it is therefore important to know to what extent the impurities present may be harmful to the various operations and how these impurities may be removed.

Excluding distilled water, rain water, and water from melted ice or snow, the following

impurities may be present:
1. Dissolved salts such as bicarbonates, chlorides, and sulphates of calcium, magnesium, sodium and potassium. In case calcium salts are present and a developing formula is used containing sodium bisulphite or potassium metabisulphite, fine needle-shaped crystals of calcium sulphite are apt to separate out in the developer as a sludge on standing. The sludge is harmless if allowed to settle, though the developer is robbed of sulphite to the extent of the amount required to form the sludge. If the developer is agitated, the sludge will cause trouble by settling out on the emulsions of plates, films, etc. Other salts have usually little effect on a developer, although chlorides and bromides exert a restraining action.

Dissolved salts often cause trouble by crystallizing on the film after drying, and although not always visible as crystals to the eye, they

detract from its transparency.

2. Suspended matter in the form of dirt and iron rust, which if not filtered or allowed to settle will cause spots.

3. Slime, consisting of animal or vegetable colloidal matter and which is not removed by filtering. If such water is used for mixing solutions, the colloidal matter gradually coagulates and settles out in the solution as a sludge.

4. Dissolved gases such as air, sulphuretted hydrogen, etc. Water dissolves about 2 per cent. of air at 70° F. and when a developing agent like hydroquinone is dissolved without the addition of sulphite, the oxygen present in the water combines with the developing agent forming an oxidation product which will cause chemical fog.

Sulphuretted hydrogen gas present in sulphur water will also cause bad chemical fog, but the gas may be removed by boiling or by

precipitation with lead acetate.

Purification of Water

Water may be purified as follows:

1. By distillation: Distilled water should be used whenever possible for mixing solutions.
2. By boiling: This coagulates the colloidal

matter and changes certain lime salts to the insoluble condition which then settle out, while dissolved gases such as air, sulphuretted hydrogen, etc., are removed. Therefore, unless the water contains an excessive amount of dissolved salts it is usually sufficient to boil the water and allow it to settle.

3. By chemical treatment: If large quantities of water are required, chemical methods of purification must be employed, though it is only possible to remove lime salts, slime and

colloidal matter in this way.

Excessive amounts of dissolved lime salts are

very objectionable, because after washing if drops of water are allowed to remain on the plates or film, when the water evaporates the dissolved salts in the water become visible as a white scum.

The following methods of chemical purifi-cation may be adopted.

(a) Add alum to the water in the proportion of 1 gram to 4 liters. This coagulates the slime which carries down any suspended particles, and the solution rapidly clears. method does not remove dissolved salts, while the small amount of alum introduced into the water has no harmful effect on the developer.

(b) Add a solution of sodium oxalate until no further precipitate forms. This method removes the calcium and magnesium salts and coagulates the slime, though sodium and potas-

sium salts are left in solution.

(c) Most of the commercial methods of water softening may be employed, though such methods do not remove sodium and potassium

The "Decalso" process of water softening is one which can be recommended. The water is passed through a tank containing sodium aluminum silicate which is a Zeolite, and possesses the power of exchanging its sodium for the calcium and magnesium present in the water. When the Zeolite thus loaded with calcium and magnesium is washed in a strong solution of common salt (sodium chloride) it exchanges the calcium and magnesium again for sodium and is thus regenerated, and is in a condition for further softening. Full particulars may be obtained from the American Water Softening Company, 1011 Chestnut Street, Philadelphia, Pa.

Impurities in Developing and Fixing Chemicals

It is beyond the scope of the present article to indicate all the possible impurities which may be present in photographic chemicals. For a more detailed account the reader is referred to the paper by H. T. Clarke on "The Examination of Organic Developing Agents" (Phot. Jour. Amer., November, 1918, p. 481), which contains a number of analyses of developers recently placed on the market under fancy names and containing such substances as starch, sugar, salt, borax, etc.

In this article we are only concerned with the impurities usually present in chemicals which are not intentionally added as adulterant.

Impurities may have access to photographic chemicals in three ways: (a) during manufacture; (b) during storage, (c) during mixing and storage of the solution.

(a) If chemicals of repute are purchased, the photographer need not worry about impurities.

If the Elon, hydroquinone or pyro is colored, the presence of fogging agents should be suspected, although some colored samples do not give any more fog than colorless ones.

Many metallic compounds such as salts of copper and tin, metallic sulphides, etc., exert a powerful fogging action even when present only in minute quantities, and should be avoided. Chemical. Chief Impurity.

Pyro, hydroquinone, Oxidation products and aduletc. terants

Sodium sulphite Sodium sulphate

Sodium bisulphite Iron and sodium sulphate

Caustic soda Sodium carbonate

Hypo Sodium sulphite

Alum Sodium sulphate and ammonium sulphate

Chrome alum Ammonium sulphate and sul-

phuric acid

Acetic acid Water Effects of Impurities.

Chemical fog

Adulterants weaken the effect

of the developer

Keeping properties of the developer are impaired.

Iron gives a dirty red solution with pyro.

the accelerating Decreases power.

Diminishes the fixing power. Diminishes the hardening action.

Excess of acid tends to cause sulphurization of the fixingbath.

Deficiency of acid causes milkiness of the acid fixing-bath due to the precipitation of aluminum sulphite.

The foregoing table indicates the nature and effect of the more common impurities present in the chemicals used for developing and fixing baths:

(b) For impurities introduced during storage see "Storage of Chemicals."

(c) If during mixing the water contains dissolved air and the developing agent is dissolved before the sulphite, it becomes oxidized, and the oxidation product formed causes fog. (See "Mixing of Developers," "Storage of Solutions," and article on "Chemical Fog.")

Storage of Chemicals

Chemicals should be stored in well-corked or well-stoppered jars in a cool dry place, because most chemicals are affected by air which contains oxygen, carbon dioxide gas,

(a) Oxygen readily attacks such substances as sodium sulphite, especially in the presence of moisture, converting it into sodium sulphate, which is useless as a preservative. With crystallized sodium sulphite the sodium sulphate forms on the outside of the crystals as a powder, which may be washed off and the crystals dried. It is less easy to detect sodium sulphate in desiccated sulphite except by chemical tests.

Other substances which combine with oxygen and are therefore said to be oxidized are sodium bisulphite and potassium metabisulphite, and all developing agents such as pyro, hydroquinone, etc., which turn more or less brown, the extent of the color roughly indicating the

degree of oxidation.

(b) Carbon dioxide gas combines with substances like caustic soda and caustic potash, converting them into the corresponding carbonated alkalis which are less reactive. caustic soda is kept in a stoppered bottle the stopper usually becomes cemented fast by the sodium carbonate formed, so that it should be kept in a waxed corked bottle. Owing to the solvent action of the caustic alkalis on glass the inside of the glass bottle containing caustic or strongly carbonated solutions becomes frosted, though the amount of glass thus dissolved away will usually do no harm.

(c) Certain chemicals have a strong attraction or affinity for the moisture present in the atmosphere, and gradually dissolve in the water thus absorbed forming a solution. This phenomenon is termed "deliquescence," and the chemicals are said to "deliquesce." Familiar examples are ammonium thiocyanate, potassium carbonate, caustic soda, caustic potash, sodium sulphide, uranium nitrate, sodium bichromate, etc., which should be stored in corked bottles, and the neck dipped in melted paraffin wax.

As mentioned above, it is difficult to prepare a solution of definite percentage strength from a chemical which has deliquesced, though it is usually sufficient to drain off the crystals, or to use a hydrometer, referring to a table giving the hydrometer readings in terms of percentage

strength.

(d) While some chemicals absorb moisture as above, others give up their water of crystallization to the atmosphere, and therefore lose their crystalline shape and fall to a powder, and are then said to "effloresce," the phenome-non being termed "efflorescence." Some crystals do not contain any water, and therefore

A very dry atmosphere is suitable therefore for storing deliquescent salts, but not for efflorescent salts. The only way to store chemicals is to isolate them from the air by suitably

sealing.

How to Store Solutions

Stock solutions and developers should be stored in either large glass bottles, earthenware crocks, wooden vats or tanks of resistive material, and so arranged that the liquid may be drawn off at the side and near the bottom.

Large glass bottles and crocks should be fitted with a rightangled glass or lead tube passing through a rubber stopper wired to the bottle, the tube being opened and closed by means of a pinch cock clamping a short length of rubber tubing.

In case a solution such as pyro has to be stored for a long time and withdrawn at intervals, an absorption bottle containing alkaline pyro may be fitted at the intake, which absorbs oxygen from the air as it enters the bottle after

withdrawing part of the solution.

It is often recommended to pour a layer of refined mineral oil on the surface of a solution so as to protect it from the air, though this is very messy when the bottle has to be refilled.

There is a battery of stock solution bottles, which are arranged on lead-covered shelves under which a large trough is placed, or, the floor may be so arranged as to form a sink, so that in case of accidental breakage no serious damage is done. This precaution is of special importance in the case of hypo solutions which might otherwise flood an entire building and inoculate the various rooms with hypo dust causing an epidemic of spots.—J. I. CRABTREE.

Effect of Impurities in Water

It is important to know to what extent the impurities present in water may be harmful and how these impurities may be removed.

Excluding distilled water, rain water, and water from melted ice or snow; the following

impurities may be present:
1. Dissolved salts, such as bicarbonates, chlorides, and sulphates of calcium, magnesium, sodium and potassium. In case calcium salts are present, and a developing formula is used containing sodium bisulphite or potassium metabisulphite, fine needle-shaped crystals of calcium sulphite are apt to separate out in the developer as a sludge on standing. The sludge is harmless if allowed to settle, though the developer is robbed of sulphite to the extent of the amount required to form the sludge. If the developer is agitated, the sludge will cause trouble by settling out on the emulsions of plates, films, etc. Other salts have usually little effect on a developer, although chlorides and bromides exert a restraining action. Dissolved salts often cause trouble by crystallizing on the film after drying, and although not always visible as crystals to the eye, they detract from its transparency.

2. Suspended matter in the form of dirt and iron rust, which, if not filtered or allowed to

settle, will cause spots.

3. Slime, consisting of animal or vegetable colloidal matter and which is not removed by filtering. If such water is used for mixing solutions, the colloidal matter gradually coagulates and settles out in the solution as a sludge.

4. Dissolved gases, such as air, sulphuretted odrogen, etc. Water dissolves about 2 per cent. hydrogen, etc. Water dissolves about 2 per cent. of air at 70° F. and when a developing agent, like hydroquinone, is dissolved without the addition of sulphite, the oxygen present in the water combines with the developing agent, forming an oxidation product which will cause chemical fog. Sulphuretted hydrogen gas will also cause bad chemical fog, but the gas may be removed by boiling or by precipitation with lead acetate.

Water may be purified as follows:

1. By distillation. Distilled water should be used whenever possible for mixing solutions.

2. By boiling. This coagulates the colloidal

matter and changes certain lime salts to the

insoluble condition, which then settles out; while dissolved gases, such as air, sulphuretted hydrogen, etc., are removed. Therefore, unless the water contains an excessive amount of dissolved salts, it is usually sufficient to boil the water and allow it to settle.

3. By chemical treatment. If large quantities of water are required, chemical method of purification must be employed, though it is only possible to remove lime salts, slime and colloidal

matter in this way.

Excessive amounts of dissolved lime salts are very objectionable, because, if after washing drops of water are allowed to remain on the plates or film, when the water evaporates, the dissolved salts in the water become visible as a white scum.

The following methods of chemical purification

may be adopted:

(a) Add alum to the water in the proportion of fifteen grains to a gallon. This coagulates the slime, which carries down any suspended par-ticles and the solution rapidly clears. This ticles, and the solution rapidly clears. method does not remove dissolved salts, while the small amount of alum introduced into the water has no harmful effect on the developer.

(b) Add a solution of sodium oxalate until no further precipitate forms. This method removes the calcium and magnesium salts and coagulates the slime, though sodium and potassium salts

are left in solution.

(c) Most of the commercial methods of water softening may be employed, though such methods do not remove sodium and potassium salts.-Photo Digest.

Apparatus Repairs and Renovations

JUST now it is not easy to get even the simplest camera repairs done quickly, while the cost, like most other things, is nearly double what it used to be. It is therefore highly desirable that the photographer should be able to help himself when he has a mishap or any part of his apparatus gives out through

Before starting it is very desirable to obtain a few tools, as it is very easy to do more harm than good by trying to make shift with unsuitable appliances. Most of the tools needed are small, and the quality usually supplied to fretworkers will answer very well, besides being less costly than those made for cabinetmakers. I would suggest the following as a start: Two screwdrivers, one of fair size with, say, a 9-inch blade, and one quite small one for flange screws and fixing small hinges. It should be noted that a screwdriver-or, as it is more correctly called, a turnscrew-should not have a sharp edge like a chisel, but should be square at the end so that it fits well into the bottom of the cut on the head of the screw. This is to prevent it jumping out, damaging the screw and perhaps scratching the woodwork. A large bradawl makes a very good small screwdriver if the end is properly shaped, and costs much less than the proper article. Next we want a couple of bradawls, medium and small sizes, the latter being square in section and tapering to a sharp point. This pattern is much better for hard woods, such as mahogany and walnut, as it may be used as a drill, and any risk of splitting avoided. A small Archimedian drill is very useful, as it may be used for metal as well as wood. A quarter-inch chisel, a small hammer and two or three small files will also be necessary, and if the expense be not objected to a small tenon saw and one of the little American steel planes may be added. Although not to be classed as tools, two or three sheets of fine glass-paper will be found almost indispensable, as is also a tube of Seccotine or Le Page's fish glue. For large work and fixing bellows ordinary glue is best, and an efficient glue-pot may be improvised from a jam-pot and a small saucepan; it is desirable to put one or two small pieces of broken glass or china in the saucepan first to allow the hot water to circulate freely under the jam-pot. Screws and nails of suitable size must, of course, be procured as needed, and no risks in using those of too large or too small a size should be taken. It is impossible to deal with my subject in anything like a systematic way, as no two instruments will require exactly the same repairs, so that I will deal with some of the defects most commonly met

Looseness of the rack and pinion adjustment, which allows the camera back to move when the slide is inserted or when the bellows is fully extended is usually easily remedied. All that is necessary is to take out the screws which fix the rack to the baseboard and to pack up underneath with strips of brown paper, placed where the loose places were. If the whole length is packed up it may cause some places to fit too tightly. Care must be taken that the screws when replaced have a good hold. If the thickness of the paper prevents this, slightly longer screws must be fitted, or the holes may be plugged with a small peg of mahogany glued in and the holes redrilled. A good bit of cigar-box wood will do to make the pegs from. Edge-racks in which the teeth are cut on the edge of the strip (like a saw) are more difficult to deal with. With these it is necessary to plug all the screw holes and to make new ones a shade higher so as to bring the teeth into engagement with the pinion. The pinion itself, being usually of steel, rarely needs attention, but if the teeth or leaves of the pinion are damaged a new one must be obtained. These fittings are listed by such firms as Fallowfield, Kodak and others and usually only require a touch of the file to adjust

Clamping screws sometimes cease to hold, owing to the thread being worn. A washer placed under the head will often bring another part of the thread into action. If the plug or nut is worn it must be replaced by a new one, although in some cases a few light blows with a hammer will close it up well enough to serve for a time.

Woodwork is repairable by glue or screws, and I would give a word of caution against trusting to any glued joint which has been allowed to dry without being clamped together until the glue is dry. The less glue that is

left between the surfaces the better it will hold, so that we must squeeze out all we can before drying. I am afraid that I cannot give any general instructions for doing this, as the shape of the work varies so much. Ordinary screw clamps as used for holding down sewing machines answer well for two flat surfaces such as the runners on a baseboard; for many other jobs stout strips of wood with small blocks screwed on a little wider apart than the article to be held do very well. The frame, let us say, is glued together, the ends placed between the blocks and thin wooden wedges driven in to give a firm hold. When the wood is thick enough a few small brass screws will add greatly to the strength of the joint.

Small holes and crevices where wood has broken away may be filled with a kind of brown sealing-wax, known to cabinet-makers as "hard sealing-wax, known to cabinet-makers as "nard stopping," but it is easier to use a paste made of fine mahogany sawdust and fish-glue. This dries very hard and can be polished over if necessary. Another very useful paste which sets hard is made of dry zinc white, or even French chalk mixed with fish-glue. Cabinetmakers use ordinary glue for stopping compositions, but it has a tendency to get too stiff on cooling to fill the holes easily.

A repair that is frequently needed is the fitting of new velvet in dark slides and the back frames of cameras. This is quite simple if done in the right way, which is to put the glue on the wood and not on the velvet. Ordinary ribbon velvet, to be obtained of any draper is used. This has a selvedge on both sides, which keeps it from fraying. If there is much space to be filled double velveting must be resorted to. This calls for a narrow velvet down the middle of the groove, leaving the wood exposed on each side; upon this a second strip the full width of the groove is placed and well rubbed down. Sometimes one finds a camera or slide fitted with a thick velvet-like stiff plush. This is called Utrecht velvet, and as it is not made in the ribbon form the strips must be cut from the piece. In all cases it is necessary that the glue should only be tacky when the velvet is applied. If too liquid it will run into the material and set the pile into a hard mass. The same method of fixing is employed when fitting new flexible joints to dark-slide shutters. The old glue must be scraped off and new glue applied, taking care not to let it run into the joints. The material, which may be strong black linen or thin leather cloth, is then laid on and well rubbed down.

Having done the necessary repairs we can turn our attention to cleaning and repolishing. I will not touch on French polishing, as it would take too much space to describe, and the details are available in many little manuals. For most camera work the ordinary furniture polishes are sufficient and require no special skill to apply them. If the wood is very dirty and greasy a good rubbing with turpentine will clean it ready for the polish, or the surface may be washed with soap and water. I do not, however, care to wet a camera if it can be helped, so that I recommend turpentine, or if this cannot be obtained, motor spirit or benzole.

Methylated spirit or alcohol in any form must not be used, as it will dissolve the polish, as also would ammonia, soda, or any other alkali. A very simple polish, which also cleans the surface, may be made of equal parts of olive oil and vinegar mixed in a saucer and applied with a flannel rubber; when the surface appears to be clean it is polished with a soft duster. A very good polish for cameras and furniture generally is made as follows:

Mix the oil and vinegar gradually, shaking well, then the spirit and antimony, again shaking. This mixture gives a good polish with little

This mixture gives a good polish with little labor, and does not show finger-marks. It is, so far as I know, the only satisfactory mixture for ebonized woodwork. To leave a nice clean finish it is necessary to rub all mouldings and corners very thoroughly or the polish will collect dust and spoil the look of the article.

A very dilapidated studio stand may be made quite respectable by rubbing down the surface with glass-paper until all scratches and abrasions have disappeared, and then giving two thin coats of black Robbialac, a preparation much used for motor-cars. Your old pine or oak stand will then bloom out as a new ebonized one. The enamel is slow drying, so that the stand should be left over the weekend to dry. It is well to let a week elapse between the two coatings. Head-rests and other metal goods can be treated in the same way. The Robbialac may be had in various colors, but I prefer the black.

Old lens mounts may be renovated with little trouble. Supposing we have an old portrait lens of which the brass-work has become very black, the first thing to do is to remove the cells containing the glasses and put them away safely. Take off the pinion and slip the jacket off the tube, then rub the jacket flange and hood with methylated spirit to which a little ammonia has been added until all the lacquer is removed. Polish all the brass, including the tube, with rottenstone and sweet oil until the surface is quite bright. If there is much corrosion it may be necessary to use a composition known as "polishing brick," which can be obtained from most drysalters in Clerkenwell or from Coope's in Soho. A little of this is crushed up and mixed to a paste with salad oil and rubbed on with flannel till a good surface is obtained. The flange jacket and hood should then be lacquered, but before doing so any trace of oil must be removed with spirit or by polishing with whiting. Hot lacquering is rather beyond the powers of the amateur, so that it is best to use a cold lacquer which is composed of celluloid. This may be colorless or deep or pale gold color. It is applied by floating on plentifully with a soft camel-hair brush, and allowed to dry for a couple of hours before assembling the parts again. The inside of the tube should receive a coat of dead black, or, what I much prefer, a lining of black velvet. The lenses should, of course, be carefully cleaned before returning them to their places.

There is one little job which belongs neither to the wood or metal classes, that is the renovation of the bellows. These often get shabby as well as limp, while the inside loses its pristine blackness and is likely to reflect an undesirable amount of light. It is, of course, easier to handle the bellows if it is taken out of the camera, but this takes time, and as glue is used there is a chance of tearing. The camera must be fully extended and the bellows dusted inside and out with a soft brush, followed by a slightly damp cloth, with which any spots are rubbed to see if they can be moved. Any leaks or doubtful places should now be patched with black silk or other thin close material and Seccotine, and strips of the same applied to any parts which have been badly creased. When the glue is dry the inside may receive a coat of dead black, which may be made of lampblack and spirit, with enough negative varnish added to keep the black from rubbing off, or better still, Nigrogene, which is the best black for the inside of cameras and lenses I have yet seen. If the bellows has gone very limp it will be better to mix lamp-black with very thin glue and coat the inside all over. This cannot be satisfactorily done without detaching the bellows so that the folds can be pulled flat, otherwise the glue will run into the canvas and make a mess of the job. The outside may now be treated, and I may say that, as a rule, I have found it better not to attempt to revive the color, but to give a thin coating of varnish or even a wax polish like Ronuk, which cleans and brightens the surface. If thoroughly faded it is best to dye the bellows black, and this can easily be done with shoemakers' finishing ink, which can be got from any leather seller in two-penny bottles. This is painted on with a soft brush, and when dry polished with a soft shoebrush. This leaves rather a smoky polish, but it is a good base for a coat of Cherry-blossom or Nugget boot polish. The finishing ink answers excellently for furnishing up kodaks and other hand cameras that have got rusty-looking. A camera which has lost its freshness by being exposed in a window may be freshened up in five minutes, and there is no trace that it has been done, as there would be if varnish of any kind had been used.—B. J.

Negatives for Planographic Printing

The photo-engraver being frequently called upon to make negatives for the lithographer, who may require them for photo-lithographic transfers for printing from stone or metal, for either direct printing or offset printing, is frequently puzzled as to whether the negatives should be reversed or not. W. J. Smith supplies the list following, which tells the lithographer's requirements:

 Negatives for collotype transfers to Reversed. stone or metal Negatives for printing direct on metal and offset printing . . Direct. Negatives for printing on photolitho Direct. Negatives for positives to print on Direct. copper and etch intaglio

Acetone

ACETONE being rather a live topic of discussion at present perhaps a few words in regard to its chemical properties and its uses in the developer

may not come amiss.

Acetone is a chemical compound, just as alcohol and carbonate of soda are chemical compounds. The elements which combine to form acetone are carbon, hydrogen, and oxygen; the molecular proportions being represented by the chemical formula C₂H₆O.

Acetone is a colorless liquid having an odor somewhat similar to the odor of peppermint. Its taste is also similar to that of peppermint. is very mobile—that is, the surface of the liquid in the bottle is very easily agitated and its wave motions are more active than those of water.

Acetone is very readily inflammable. A little acetone poured out in a dish takes fire and burns very much like benzine or gasoline. It takes fire from a lighted match held half an inch above the surface of the liquid, and burns with an ordinary yellow flame. Acetone should be handled with quite the same precautions as benzine or gasoline. It is very volatile. If the finger is dipped in acetone and then held in the air, there is a strong sensation of cold due to the rapid evaporation of the acetone, and the finger is soon completely dry. This property of acetone has to do with one of its uses in the developer.

The chemical test for acetone is to add a solution of iodine in potassium iodide and then a solution of caustic soda to the solution to be tested. If acetone is present the odor of iodoform

will be noticed.

Acetone is made by heating sodium acetate or calcium acetate. The vapors of acetone are given off and are condensed in suitable apparatus to liquid acetone. It is also obtained as a by-product in the process of distilling wood to make wood alcohol. It is an alkaline compound, and may be used in developer to replace carbonate of soda and carbonate of potash, the alkalies commonly employed. It is principally in pyro developer that acetone is used. A pyro developer prepared with acetone has different working properties from the usual pyro-soda developer. shadow detail appears very soon after the high-lights, but the negative must be left in the developer after the detail has appeared in order to gain density. When using pyro-soda, it is sometimes difficult to make a soft negative of a contrasty subject, for, by the time the detail has appeared, the high-lights are over-dense. With pyroacetone, as with metol, a negative of any desired degree of softness may be secured, since the detail appears early in the development and greater or less contrast in the negatives may be secured by developing a longer or shorter time.

Acetone also has less effect on the gelatin

of the emulsion coating than carbonate of soda. For this reason, pyro-acetone may be used at a temperature that would be impossible with carbonate of soda on account of frilling. This property makes pyro-acetone a valuable developer for warm climates.

In discussing the properties of acetone mention was made of its ready volatility. In a developer containing acetone, the acetone is continually evaporating and the vapor hovers over the surface of the developer. This vapor to some extent prevents the air from reaching the developer, and so tends to prevent the oxidation of the developer. When a one-solution developer is employed the vapor of the acetone will partially fill the space in the bottle, above the developer, and by pre-venting access of air it causes the developer to keep better than one without acetone.

In making up a developer containing acetone, we may consider that it will require about twelve times as much acetone in the developer as was necessary of carbonate of soda. It will also be necessary to increase the quantity of sulphite of soda. Pyro-acetone has a greater tendency to stain than pyro-soda and a larger proportion of sulphite is necessary to counteract this tendency.

A good formula for pyro-acetone is that recom-

mended by Cramer:

	Α				
Water					24 oz.
Sodium sulphite					4 oz.
Pyro			•		1 oz.
	В				
Water					20 oz.
Cramer's aceton	e				1 oz.
Jse one ounce of A	\ to	ten	ou	nces	of B.

The prepared developer contains, on the basis of one ounce of pyro:

Water Acetone		•	•	•	•	•		240 oz.
		•	•	•	•	•	•	12 02.
Sodium	su	lphi	ite					4 oz.
Pyro		٠.						1 oz.

The Cramer formula for pyro-soda developer contains on the same basis:

Water						208 oz.
Sodium						1 oz.
Sodium	su	lphi	te	•		2 oz.
Pvro		-				1 02

Comparing the two formulæ the increased proportion of sulphite in the acetone developer is readily noticed, and also the fact that twelve ounces of acetone are necessary to replace one

ounce of carbonate of soda.

As this discussion would not be complete without stating both sides of the question, we must mention the disadvantages of acetone. It is much more expensive than carbonate of soda, and about twelve times as much is required. But the materials for making a developer are so inexpensive that this is not of very great importance. To the traveling photographer the difficulty of carrying a large bulk and weight of liquid will prove a serious inconvenience.

Lastly, pyro-acetone is somewhat more prone to stain than pyro-soda and hence it is advisable to remove the plate from the developer as little as possible and to fix the developed plate in an acid fixing bath. The disadvantages of acetone are very slight, and are far overbalanced by the advantages which have been described. It is well worthy of a place in every photographer's workroom.

Repairing Leaky Book-form Slides

It frequently happens that the book-form pattern of double dark slide after some use (or it may be due to the shrinkage when improperly seasoned wood has been used in construction caused by damp or the action of the sun), admits light at the joint where the slide opens, with the result that the plates in the latter get fogged. There is no reason when this happens why the slide should be scrapped as I have recently proved by making a very simple though satisfactory repair which made the slide as light proof as when it was first in use. Upon a careful test of the slide it was found that its condition was in every way satisfactory except at the point mentioned above, but for some reason a certain looseness of fitting was evident here, and I cast about for some means of preventing the light from entering by ensuring a tighter fit between the two halves when the slide is closed.

This was done very easily in the following way: I procured some odd strips of wash or "chamois leather" of the same length and width as the rebate of the slide. These were "seccotined" all round the latter, care being taken to secure a perfectly square joint at the corners in order to prevent light entering here. The slide was then closed and put aside for the adhesive to get thoroughly dry. Upon testing, the slide was found to be in every way light-proof, and owing to the elasticity of the leather a much tighter fit was secured when the catches were in position. The leather was carefully dead-blacked, more from the point of view of appearance than for any other reason. Upon another slide defective in the same way I tried strips of black velvet, but this does not answer quite so well, as it has not the elasticity of chamois. Any saddler would be glad to give or sell a few scraps of chamois leather for a few pence. Many photographers who have slides defective in this way while the draw-out shutters are perfectly lightproof, will welcome the above simple method of repairing what are really most expensive accessories, especially in large sizes.—British Journal of Photography.

Photographic Materials and Processes

Photographic development papers and desensitizers. W. C. Mann. Phot. Jour., 1919, 59, 184—187.

ONE of the chief defects in the raw paper base supplied for photographic purposes is the presence of small particles of a desensitizer, chiefly iron. Copper, generally as brass or bronze, is also met with, but only rarely; it comes chiefly from the heater-bars of the paper-making machinery or from defective sorting of the rags, at both of which points effective precautions are under the control of the paper maker; copper is also a much less powerful desensitizer than

iron. The presence of iron particles is easily demonstrated by bathing the paper in a solution of potassium ferrocyanide and nitric acid or of potassium ferricyanide and hydrochloric acid, which show them as spots of Prussian blue; a more delicate test is with an acid solution of quinol containing a little silver nitrate. particles may also occur in the baryta coating of the paper or in the sensitive film, but this is not common. The baryta coating acts as an insulator between the paper base and the sensitive film, but imperfectly owing to the "creep" of soluble salts, more pronounced in the case of print-out papers containing soluble silver salts. The precautions to be taken are selection of the baryta coating for its insulating properties and of emulsion for lack of sensitiveness to the desensitizing action of the metallic particles, different emulsions varying considerably in this respect. This sensitiveness may also be reduced by the use of negative catalysts, such as mannitol, quinin, and oxalates, which counteract the effect of the desensitizer. A raw paper base containing numerous iron particles when coated with an emulsion treated in this way showed practical freedom from insensitive spots.

Color values in monochrome and a new viewing filter to assist in obtaining them. F. F. Renwick. Phot. J., 1919, 59, 158—169.

Color-sensitive plates are used for two very different classes of work. In the first, chiefly represented by three-color processes, separate records are obtained through differently colored filters with the object of obtaining colored reproductions; for these processes a plate which had uniform sensitiveness to the normal spectrum of average daylight would be approximately ideal. In the second class a record in monochrome is required in which the tone values of the original should be preserved in the reproduction; in this case an ideal plate would be one in which the color sensitiveness corresponds with that of the normal eye. The paper gives a résumé of the results obtained by previous workers in this subject. The curve of sensitiveness of the eye shows a maximum at about $\lambda = 555\mu\mu$ and falls off symmetrically on each side of this point. There is not at present any plate whose color sensitiveness even approximates to this ideal, so that for correct reproduction in monochrome of colored objects a correction filter must be used. The color of the ideal filter for this purpose depends on the actual color-sensitiveness of the plate used; its absorption curve is the difference between the curve of plate-sensitiveness and that of visual luminosity. If the plate is uniformly sensitive to the spectrum the absorption curve of the filter is the inverse of the luminosity curve; this latter is worked out, for the open arc, from the figures given by Abney, applying corrections to allow for Abney's arbitrary spectrum scale and for the fact that he used a slit of constant width and not of a constant range of wave-lengths. It is not easy by visual inspection alone to estimate correctly the relative tone values of the different parts of a colored subject or exactly how a color-sensitive plate with or without a filter, will

reproduce it; if however the subject be viewed through a filter of complementary color to the ideal correction filter the apparent tone-values will be the same as in the reproduction by the plate. If the viewing filter be used in conjunction with a taking filter the appearance is that of the reproduction by the plate through this taking filter. The blue viewing filter described and shown by the author was worked out to correspond as nearly as practicable with this theoretical filter for the Ilford Panchromatic plate.

Drying (photographic plates and papers) by alcohol. L. P. Clerc. Bull. Soc. Frang. Phot., 1919, 6, 85—91.

A WHITE opalescence occurring on negatives the drying of which was hastened by treatment with spirit was found to be due to precipitation in the film, or between the film and the glass support, of calcium bicarbonate, and to a less extent, of calcium sulphate. The salt was supplied by the washing water, the trouble occurring chiefly in districts where the water supply is very hard. The effect can also be produced by other salts insoluble in alcohol, for any male sedium bicarbonate. It may be avoided example sodium bicarbonate. It may be avoided by washing in salt-free water (distilled or rainwater) before immersion in the spirit bath, but more easily by a short preliminary treatment with a weak solution of hydrochloric, nitric or acetic acid, the calcium salts of these acids being soluble in alcohol. The time taken in drying plates and papers after treatment with spirit is independent of the length of time in the spirit, provided this is enough, about ten minutes, to allow the attainment of equilibrium between the film and the bath; it varies considerably, however, with the final strength of the spirit bath. Curves are given showing the effect of the strength of the spirit on the time of drying for both plate and papers, the effect being much less in the latter case.

PATENT NEWS

Direct, permanent, natural, color effects; Method of producing — spontaneously by the action of light rays upon chemical matter. H. Soar, New Southgate. Eng. Pat. 127,683, 25,2.18. (Appl. 3275/18.)

A GLASS plate or other support is provided with a thin coating of a solution of ammoniacal copper sulphate or hydroxide or both and potassium or ammonium bichromate. While the coating is still liquid, the plate being held in a horizontal position, it is exposed to light in the presence of air, the first effect being the formation of a whitish film upon the surface which is then colored by further light action according to the length of time of exposure and to the color of the light. On drying the solution in darkness and then washing in water, a colored

record is obtained permanent to light and air but soluble in ammonia. Similar effects are obtained by exposing a glass plate to the combined action of light and hydrofluoric acid gas.

Photographic printing paper and transfer processes. Kerotype, Ltd., and T. P. Middleton, London. Eng. Pat. 126,149, 7.5.18. (Appl. 7641/18.)

The waxed paper supports for the transfer processes described in Eng. Pats. 29,616/12 and 12,091/15 is prepared for coating with the gelatin emulsion by a matt substratum coating obtained from a solution of two resinous substances having different solubilities in mixed solvents. A suitable solution consists of gum sandarac (90 grains) and gum mastic (20 grains) in methylated ether (sp. gr. 0.720, 3 oz.) and methylated spirit (90 per cent., 3 oz.) or in alcohol (90 per cent., $4\frac{1}{2}$ oz.) and anhydrous ethyl acetate $(1\frac{1}{2}$ oz.). The waxing, substratum coating and coating with sensitive emulsion may be carried out in one continuous operation, or the last process may be separately carried out. In the apparatus described, the paper, after applying the substratum coating, is dried in a partially exhausted chamber.

Color photography. I. Kitsee, Philadelphia, Pa. U. S. Pat. 1,298,514, 25.3.19. Appl., 22.9.16. Renewed 5.2.19.

DIFFERENTLY colored chromated gelatin films on either side of a suitable support are simultaneously exposed through filters of the same color as the films.

(Photographic) transfer process. F. W. Kent, London, and T. P. Middleton, Farnham, Assignors to Kerotype, Ltd., London. U. S. Pat. 1,299,479, 8.4.19. Appl., 17.6.16.

Tinting Process for Photographs and Product Thereof. J. I. Crabtree, Assignor to Eastman Kodak Co., Rochester, N. Y. U. S. Pat. 1,279,276, 17.9.18. Appl., 25.1.17. The gelatin of a photograph with an opaque image, such as silver, is tinted by treatment first with a solution of a suitable metal and then with a solution of a suitable precipitant, the colored precipitate formed in this way being so finely divided as to be practically transparent.

Color photography. F. E. Ives, Philadelphia, Pa. U. S. Pat. 1,306,904, 17.6.19. Appl., 9.8.17.

DIFFERENTLY sensitized films, one or more of which may be also colored, are arranged in one pack so that the upper films act as color screens for the lower ones, different color records being thus obtained. For instance, the upper film may be blue-sensitive, the second film green-sensitive and dyed red to form a screen for the third, redsensitive, film; to bring the sensitive surfaces as near together as possible the outer ones are placed facing one another and the middle film is coated on celluloid.

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LIGHT AND SHADE AS APPLIED TO PHOTOG-RAPHY

By ALYN WILLIAMS

HEN Whistler was complimented on one of his pictures being so close to nature, he deliciously retorted that "Nature is creeping up." The photographer might well take this to himself, for his art has crept up and made for herself a place with the sister arts—delighting and astounding everyone by its artistic charm, its variety of effects, and introducing not only tone and temperament but the very individuality of the man into his work. The photographer seems to be working side by side with the artist -gleaning where he has gleaned, and studying from the point of view where he has studied. Whether artist or photographer, we are, like the philosopher of old, seeking for the subtle something; but, alas! there is no royal road in art, and each must be content to work to the bitter end. We are all after the one thing, and that is to make our work We are often deeply attracted by a picture, attracted even before we are

conscious of its color harmony, chiaroscuro, drawing, or technic. This indefinite something, when we analyze it, turns out to be a very definite quality: It is the general plan or disposition of the surface of a picture, placing and emphasizing to the very best possible advantage the composite matter of the work we are producing. This spacing into a harmonious whole, giving its masses their due proportion, balancing its noble lines, is the foundation and essence of nearly all the finest and best art. No mere blandishments of brushwork, tricks of color, or firework dexterity of technic built on a poor design can cope with the allurement of a nobly planned work. If our design is to have allurement it must contain some element of the sense of life, some vital force of striking and dominant power, with a definite characterization, and our composition something of the unusual and unexpected, not the elemental precepts of the horizon

occupying one-third and so on; but like unto the Japanese, whose well-planned scenes and simple lines so often disturb and startle us into admiration. One does not wonder that their work has so successfully influenced our own artists. Do you recall the "Avenue," by Hobbema? What a magnificent example of planning—the tall trees rising against the sky, all their stiffness vanishing by the connecting and sweeping curves of the clouds! "The Windmill," by Many a small picture by this means is enlarged to colossal proportions, with a distinction that many a large and vapid work forever despairs of. Whistler understood this to the full, spacing his work with a deftness and sureness that made his slender material seem all-sufficing. Millet and Puvis de Chavannes, in their respective methods, had the same grand and soul-stirring feeling.

Any photograph or drawing can be experimented upon by placing pieces of paper around it, and so altering its proportions by continual shifting, which enables us to see that each spacing has its own approximate set of proportions. And there is no definite but a very flexible rule: Quietness and restfulness are acquired by large blank spaces (forcefulness and vigor creep in the more these are filled up); the sense of repose which every true work of art must have -this feeling of dignity and breeding which most portrait painters desire and which the finest exponents of this art carried to its utmost point. Velasquez by making the setting of his subject a plain wall and vacant floor space ensured that grand and stately air with which his work abounds.

A good picture well composed has one prominent subject, not two or three clashing and clamoring for recognition and disturbing the general effects. This principal feature should be focussed or placed near the center (not the dead center, as this would savor too much of the formal or religious composition), with secondary masses on either side by way of support to the central object. These, in their place, should not be too forceful or so large as to interfere with it. This pre-

dominance can still be forced by making it the principal light, strongest color or accented tone, and again by keeping this central object at the highest point, thereby still helping to focus this more than the secondary masses supporting it on either side. This then resolves itself into the pyramidal or, in other words, the triangular form of composition, on the basis of which nearly all the finest of our works of art are founded, and I feel it may well be asserted to be one of the great secrets governing all good and solid work. Nature has come to our help in the human body by making the head our chief center of interest in all portrait work, to be naturally supported by the arms and body, giving us a wellsustained and pictorial composition, "the whole body fitly joined together and compacted." The apex of the triangle is again brought into the quadrilateral form by some slight object of interest—again, not too large or forceful to interfere with our central interest-introduced below its base. This form, which we will now call the diamond shape, can be further modified in its unessential details until we are brought into the oval, for our composition can always be further extended by more and more additions, which in themselves help to evolve lesser systems, creating a chain of mutual dependencies until it becomes a double, or a system within a system. The oval form is generally dangerous, leading us to discard the necessary firmness and strength that is so desirable for work of any pretensions. Also it is advisable to beware of the insidiousness of too many curves creeping in, which makes for flabbiness and restlessness; whereas our endeavor should be to see that our work has the vitality of life and vigor, which is best secured by sharp opposing lines. Diagonal lines are very helpful—sharp and forceful—and to convey this appearance again in a softer degree the curves of a spiral—and these judiciously used —are the means we must employ if our picture is to have the necessary movement, life, and motion. In portraiture, motion can be readily conveyed if the figure is placed to one side of the picture, giving the effect of coming or going by the direction of the turn of the head. Wind, rain, and storm can be emphasized by a line swinging from corner to corner across the work, everything going, as it were, out of the picture from the highest side of the diagonal line.

Both poetry and music, the sister arts, have taught us the value of This means a rhythm in our work. regular succession of motions, a repetition of our theme, this swinging recurrence emphasizing our points, making our color more harmonious, our vivacity more lively, and our quieter work more reposeful. Should our work be too restless, overstrained, and violent, a few lines-either vertical or horizontal-give the necessary repose to our composition, which should never have its fine masses and edges rounded off into too many soft curves, nor yet its fine strength of color, light, and shade reduced to get this effect of tranquility.

The arrangement of our picture may be broadly defined as consisting of tones of light, shade, and middle tint, and it is the management of the proper scattering and division of the subjects in their big, well-connected pattern that helps to appeal to the eye when our picture is first seen. All its parts must blend, and, however full of complicated detail, no part must be overstrained so as to unduly stand out, disturbing the unity of the big masses. On light works our light can never be forced too much, but dark masses become unduly conspicuous and disfigure our picture until it appears as suffering from an excrescence of patches and blotches. Any sharp light, unless, as in a portrait, near the head, should be blended into the general groundwork; otherwise it will be a spot and blemish our picture, unless it be used near the principal object. Less sharp touches should be used as a means of balancing, say, the strong top light on the head, by a few secondary touches on hands, etc.

The effect of great virility is obtained when the brightest light is contrasted with the deepest dark; but this must receive due care, otherwise all breadth is gone from our work. Leonardo de Vinci, in his treatise, advocates the use of this contrast; but Sir Joshua Reynolds points out, in one of his Discourses, "the superior splendor and effect which has been produced by the exactly contrary conduct—by joining light to light and shadow to shadow." Thus after a number of years does this fine lesson of Sir Joshua's take effect, nearly all the modern men, studying from this standpoint, giving to their work the most artistic and brilliant results, using as they do the well-considered accent, an accent only of strong light and dark in its well-focussed and central position.

Mystery, or the sense of infinity. something beyond our immediate comprehension, is perhaps one of the most delightful and yet one that is often most lost sight of. When some of the London critics are trying to discover "the something more in art," the elucidation of this would help to solve the greater part of their problem—when the imagination is permitted to have full play, not as the impressionists would understand this, but the imagination that delights in the beauties of veiled suggestions with shadows partially revealing hidden lights, or the lights dimmed with faint shadows and perplexities and half obscured and will-o'the-wisp objects that baffle us by their infinite variety. All this enchantment and more come from the subtleness that mystery casts over us, well calculated to excite out curiosity.

I wonder if the hint that the finest of the fine old masters was given us, and which seems to be but very dimly appreciated or felt, would be possible in photography? It seems an impossibility; but then so many impossible things have today become possible in the photographic world, that one wonders if this treatment of shadow, the means we have and use to define form. to make objects look round, solid, and substantial, making them project prop-Rembrandt found that shadow could be used as a mysterious veil, softening out and obliterating all blemishes and hardness, due to a too sharp definition, and that, by keeping his tones simple and comparatively flat, he could with the emphasis of his drawing give all the necessary solidity and sense of projection his subject demanded, proving that the less the modelling the less the difficulty experienced in keeping his work to the grand manner. Immediately this principle is departed from, the artist becomes engulfed in a multitudinous sea of dangers and complications that invariably lead to a want of success.

Now, one naturally asks why it is that in our search after effect we must bear in mind certain points that will help us; things that we are not always able to elucidate the why and wherefore; not possible for us emphatically to put our finger definitely on the reason; for instance, why it is that in our work all light masses placed on a dark ground on which they are strongly relieved have a charm of beauty of effect impossible to obtain by reversing the process? It may be that the dark object seen against a light background is silhouetted too strongly and is too insistent from its surroundings, and the object itself being more or less in tone does not offer the same possibility for a display of the infinite variety of effects that Nature's modelling always abounds in; that light and shade are nearly always eliminated. In our treatment of schemes of this description we can (although it is true at a certain sacrifice of our contrasts) considerably improve our subject by making our darker masses a tone lighter and by blending them into their surroundings wherever possible. This in its turn will help us in adding to our work a more beautiful and artistic charm, making it hang so much better together, while it will have acquired a degree of unity that would be impossible before. We must not lose sight of the fact that our picture should always contain this element of unity-which I may translate into the harmony which should exist in the pictorial expression, making a homogeneous whole. Now, designs worked in the inverse order—light objects on a dark ground—do not present the same obstacles to overcome, and the problem is solved with a greater beauty

of effect. This is readily borne out by letting our imagination dwell on some of the works of Rembrandt, showing, as they do, the marvellous strength and subtlety acquired by this manner, never transgressing the relation which should be evinced in the proper interpretation both in the matter of nature and of art. For nature demands our evervigilant attention, lest our work become conventional and fall into mannerisms. On the other hand, due attention must be given to the art rendering, otherwise it may degenerate into bad and unworthy painting. I feel rather strongly that in out photographic work it would more than repay the experiment if all the darks, and these generally seem to be developed to their full and rather glaring intensity, could be kept better in handthat is to say, under their usually strong tone—with the exception of where we wish to emphasize our dominant point of contrast, which, as I have explained before, is at the focus or center of interest. Apart from the more artistic result of this, our design would become a great gainer in its general unity of effect with all the serenity of an added feeling of repose. This, naturally, when the work is very small, does not call for the same necessity of reduction in our tone values, for what would be a pleasure to the eye in a miniature form becomes unduly irritating as its proportion is increased.

I have touched here upon the effect to be gained by studying that our work should develop the proper sense of unity, but this in its turn must be governed by the fact that we must never introduce into any one work more than one kind of unity; for instance, in a subject where the figure or figures are treated with a degree of detail and finish, the background, if it be an interior view and wrought up to the same degree, will tend to come forward in a more or less turbulent manner. On the other hand, if we resort to an impression in its treatment we may find we are becoming artificial and shallow, unless we use the same degree of impression in our rendering of the figure. We might here take a lesson from the works of Gainsborough, Reynolds, and Hogarth. In portraits

this can be obviated by the introduction of a piece of tapestry, curtain, etc.

I shall make no long or exhaustive dissertation on color—in spite of its strong and persistent call, or the exquisite sympathy experienced from a glowing canvas—merely taking it in its relation to photography. I will start by black-not a color at all, you will say. True, but on account of the great love given to it by all the great portrait painters, I think it deserves first place, especially before the present company. Now, its general tendency in any work is to convey a grave and gloomy character, and should be kept to pictures in which the dim foreboding and aweinspiring feeling is desired, and this diminishes in proportion to the elimination of this pigment until we arrive at the more gorgeous and lively hues into which a Fragonard might dip for his Now, the introduction of a themes. little red will give the impression of warmth and glow, which enhances its effect when certain values—as warm effects—are desired. Red, although a most beautiful color, is scarcely possible of being used in large proportions on a big scale on account of its irritant Certain colors lend themselves readily to the scheme we have in hand, and this should be carefully determined so that it harmonizes with the emotion it is intended to produce. Never could we imagine the glowing themes of Tintoretto suited to the restraint of Rembrandt, nor the warmth of Watteau with the weirdness of Whistler.

Yellow: A color of considerable beauty and luminosity, and where it prevails in any work—take for instance Turner's sun-warmed and translucent canvasses — is nearly always a certain factor of success; but this color demands a knowledge and care on the photographer's part to properly interpret, which behooves us to make use of the isochromatic plate and color screen; indeed, it is quite impossible to render a just effect of a painting without this or similar plates. A remarkable and wellconsidered work can be completely ruined by having all its tones transposed in the copy. Yet a good word must be

said on the other side, when one sees a beautiful photograph from a picture; but when confronted with the original, a sudden revulsion of feeling is experienced, owing to the harsh, strident, and inharmonious coloring, perhaps from the cause that so many landscape painters omit black from their palette to get a greater feeling of vitality and life into their work.

Blue: A color of calm peacefulness and of a greater tranquillity when the tone approaches to a green hue. The French ultramarine, in which the red tone carries with it that color's irritating tendency; and green, again, is a quiet and composing color in large masses. The dark tone of the very virulent hue can be very exasperating, but when toned with browm becomes a soothing and far from unpleasant color.

Gray: Another color restful and soothing, especially when it inclines toward blue; but this in its turn can become too cold if our work be large. A most useful color for all purposes of photographic work, particularly in landscapes, for its aërial quality, which it suggests in a great variety of ways.

This, again, if used largely White: and indiscriminately, tends to coldness, and all men who have had the color sense well defined have used it with the utmost discretion, only for the spot of particular emphasis, the other re-solving itself into pale tones of color. Titian's picture, in the National Gallery, London, of "Bacchus and Ariadne, shows the painter's resourcefulness in this color direction, and while we are studying this picture, note the masterly manner in which the strong contrasts are so vigorously and indefinitely carried all through—the powerful oppositions of color. You will always find that in large masses of colors, where they are energetically opposed to one another, the effect is more grand and striking than when a greater degree of moderation is used and they are tenderly and carefully blended.

It would be rather invidious for me to attempt any suggestions on lighting, this field having been most thoroughly explored with the most beautiful and thoroughly satisfactory results, and I 544

suppose no artist has helped more to this desirable end than Rembrandt, whose profound investigation penetrated deeply into the science of light and shade, bringing forth an almost melodramatic mystery of effects. As Shakespeare says:

"Upon the corner of the room,

There hangs a vaporous drop profound."
The forceful contrasts in later years gave place to a fine rhythmus, which in turn was succeeded by a more perfect fusion and greater realism, letting his great genius dwell on some special characteristic of the person before him, eliminating all unessentials until he probed for the soul, bringing it forth with supreme magic. This necessitated the sacrificing and casting off of the usual paraphernalia, color, the glorious

and palpitating sunlight, and most things used to obtain artistic excellence.

In Reynolds we trace the strong influence emanating from Rembrandt the methods of lighting his subjects (although he differed in never permitting the eyes to be in obscurity, but letting them tell out strong, distinctly)—his color patterns; their vague, reflected, and semi-obscured lights, that give rein to the imagination—the quality of the masses, more than their apparent disposition, breathing forth the vibration of Nature's light, and all the mysterious and elusive tone of semiillumined and partially darkened surfaces. Quo fata vocantl He is, indeed, a felicitous artist to whom Nature vouchsafes her artistic blessings.

MAKING COLD-PROCESS STRIPPING PAPER AND PLATES FOR DEVELOPING OR PRINTING-OUT BY HAND OR MACHINE

By ALFRED J. JARMAN

PART III

THE machine coating of paper for stripping purposes does not differ in the matter of preparation from The various solutions hand coating. are the same. One of the simplest of machines is made with two A standards fitted with a roller at the top and also at the bottom. The bottom roller is so fitted that it gives a clear space of about one foot from the floor, so that a trough, made exactly in shape like the trough described for hand coating, may be used, the only difference being in size to suit the width of paper to be coated. The top roller is so arranged that it will be eight feet or thereabouts from the center of the bottom roller. Each roller is fitted with grooved pulleys in which a spliced $\frac{3}{8}$ - or $\frac{1}{2}$ -inch line may travel so as to drive each roller at a uniform speed. The axle of the lower roller is so made that a cranked handle may be attached.

A sheet of paper is then passed over the rollers and tightly drawn together, so as to give about a four-inch lap, then pinned while thus tightened with a number of pins which will hold the paper with sufficient tension to enable it to travel when the handle is turned. The rate of feeding the solutions required is slight for such a length of paper. This may be accomplished by the trough resting in a wooden frame hinged at the back end so as to be lifted from the front by means of a suitable-size wedge.

If a large quantity of paper is to be coated then a machine must be employed the same as is used for coating the usual developing paper. In any

case the wood troughs that are used to hold the solutions must be coated with the same material as described for the hand-coated paper, because the solution used in the waxing process would dissolve shellac, hence the use of a trough coated with hardened gelatin, while the shellac-varnished troughs are used only to contain the gelatin emulsion.

It may be observed, when the rollers are in motion, that the paper will dip into the emulsion for about one-eighth of an inch without running over the back of the paper. It will, however, run over the moment the motion stops. The rate of coating the paper should be about one turn of the handle per second for a five-inch diameter roller, when the temperature of the emulsion is not over 90° F. This rate of coating will produce a fine surface, not too thick for the purpose required. The paper that has been coated with a hardened gelatin coating, waxed and lacquered will coat better at 80° F.

For simplicity and for turning the paper out rapidly the wax and gold-size solution will save much time, as well as produce the exact grain of the paper employed. When stripping paper is used the transferred picture will be found to adhere very firmly to a glass plate, when treated as previously described without the use of either a gelatin substratum or fish-glue, as used to be employed with albumen paper, and no material is employed to produce translucency except in one instance. The wax, or resinous matter, left upon the transfer may be readily removed with a little benzine, the surface being cleaned with a soft rag.

The production of transparencies suited for coloring in oil or water-colors will now be described.

Making Gelatino-Chloride Plates for Developing

The first thing to be done will be to procure a number of suitable-size glass plates. The best kind to use for this purpose has proved, in the writer's experience, to be the disused or discarded dryplate negatives. All this glass has been selected for dry-plate making, so all that

has to be done will be the cleaning of them to bring them into use. The best way to accomplish this will be to prepare a large panful of boiling water, into which is dissolved about one pound of common washing soda to the gallon, and, while boiling, place them into this one by one, with the gelatin surface downward. This is important, because if the plates are placed face to face they will stick together so firmly that they cannot be separated without breaking, so firmly do they become cemented.

As soon as the temperature has become reduced so that the plates may be handled without discomfort they may be taken in hand for cleaning. melted gelatin surface may be easily removed with a common nail-brush, the plate being rinsed under the faucet and placed into a tray of cold water acidulated with a small quantity of hydrochloric acid. When all the plates have been treated the same way, they must be wiped well all over the edges and both sides with a clean piece of rag dipped in the acid solution, then rinsed well under the faucet and placed in a. rack to drain and dry. By this means plates are produced with a chemically clean surface. As soon as they are dry they may be placed aside, away from dust and dirt, and covered with clean paper ready to coat with emulsion.

Coating the Plates with Emulsion

It will be necessary to provide a slab of slate or marble of any convenient size, set quite level upon a table or bench in a room that is moderately cool, free from dust, and lighted only by orange-colored light. It must be remembered that in all the operations where the sensitive emulsion is concerned no other light than that of a non-actinic character must be permitted.

Having the plates ready, prepare an emulsion according to the No. 2 formula described for paper, in exactly the same way after being washed and filtered and the alcohol added as there described. The temperature of the emulsion may be 100° F. to commence with.

Now take one of the plates, say a 4 x 5 or a 5 x 7; hold it by one of the

top corners, pour upon the middle a pool of emulsion, allow it to run to the top corner farthest from where it is held, then let it flow down to the farthest corner, lastly to the nearest corner; then drain the excess into the graduate by touching the inside of the top of the graduate so that the emulsion flows against this, thus preventing air-bubbles being formed. The plate must now be placed upon the cold slab, to cause the emulsion to set. Treat all the plates in the same way, and when set, which may occur at any time from three to five minutes, they may be placed in a rack, back to back, with one extra space between the wet surface. When the rack is filled, place it in a room away from dust to dry, or, if the room is spacious enough where the coating is done, they may be placed aside there and allowed to remain to dry, which may require from twelve to twenty-four hours, when they may be collected and packed face to back and well wrapped or packed in a suitable cardboard box until required for use.

Developing Gelatino-Chloride Plates

If plates are coated with the No. 1 formula, as given for contrast effects upon paper, the time of exposure will have to be increased by a few seconds. In either event a trial will quickly determine this.

The development of these plates may be proceeded with in the same way as for paper. Only one plate may be developed at a time, for when once development commences it goes on rapidly and the plate must be quickly placed into the acid dip to stop further development, then placed into the fixing solution as quickly as possible. Fixing will be complete in about three to five minutes. Owing to the film being very thin, complete fixation takes place rapidly. The plate or plates may now be washed in several changes of water, either in separate trays or in the usual washing box, allowing the plates to soak for five minutes between each change of water. Six or eight such changes are necessary for complete washing. The plates must now be wiped carefully with a tuft of

wetted absorbent cotton while water is running from the faucets to free the surface of any dirt that may have settled upon the surface. It will be advisable to cover the nozzle of the faucet with a fair-size tuft of absorbent cotton held in place with a four-fold thickness of cheesecloth tied securely with string. This will retain any dirt, metal chips or rust that may travel with the water through the main. cotton should be changed and a fresh tuft applied every second week, because it will become nearly choked with refuse material in that time. If this filtering is not adopted the gelatin surface will suffer from scratches and specks of dirt embedded in the surface.

The transparencies may now be dried, if a smooth surface is required, which is a necessity if they are to be colored with transparent water-colors. If the transparencies are to be colored in oil color the surface must be slightly roughened so as to give a tooth or hold for the oil color. This tooth may be produced upon the surface of the transparency by any of the following methods:

Producing a Grained Surface for Oil Color

Procure a piece of China silk; cut a piece therefrom, where no stripes or striæ present themselves, about five and a half inches wide and nine inches long; attach a thin strip of wood at each end; place another strip on top, so as to enclose the ends of the silk, using a little shellac varnish upon each strip so as to give a firm hold; then pin the two together with a few short brads or fine tacks. Now dip the silk into a solution of benzine and paraffin, five grains of paraffin to one ounce of benzine, and suspend the silk to dry; as soon as it is dry it will be ready to use. Make a solution of strong water ammonia, one dram, water eight fluidounces; pour this into a clean tray; wet the surface of the transparency well, then place it into the ammonia solution for four or five seconds; remove it and place it back down upon a clean board; wet the silk well, then place it down upon the wet transparency, bending it in shape

like the letter U; lower each end, place a piece of thin rubber sheeting on top, apply a soft squeegee carefully by holding the silk down at one end; then reverse the stroking of the squeegee, so that the silk is pressed quite flat and uniform upon the surface; now place the whole, after removing the rubber cloth, in a horizontal position to dry. As soon as the drying is complete, which may require any time from four to twelve hours (unless an electric fan is used), all that will be necessary will be to pull one end of the silk, while holding the other end firmly, when it will tear away from the transparency, leaving a beautiful grain of the silk, well suited for coloring in oil. The silk will not be injured in the least; it may be used many times over for the same purpose. treatment with the benzine-paraffin solution will prevent it sticking firmly to the plate, without in the least degree affecting the grain.

Another method is to coat the surface of the transparency with a matt varnish, made up strongly in gums as follows. Then when the matt surface is obtained, to heat the plate well over a suitable heater, so as to cause the gums to become hard and resistant. The matt varnish

is made as follows:

Gum mastic . . . 80 gr.
Gum sandarac . . . 360 gr.
Sulphuric ether . . . 4 fl. oz.
Benzole (not benzine) 1½ to 2 fl. oz.

Dissolve the gums in the ether, then add the benzole; allow this mixture to settle well, pour off the clear portion for use in a moderately wide-mouth bottle, and keep well corked in a cool place. Although benzine and benzole are represented chemically as C₆H₆, there is a great difference in these two chemicals. Benzine is obtained from petroleum, while benzole is obtained from coal-tar. Benzine in price is about twenty-five cents a gallon, while benzole is a dollar. There is also a great difference in the solvent properties of each. This explanation is given because benzole made from coal-tar is the solvent required in this case.

A third method for obtaining a surface upon these transparencies, one that gives a peculiar tooth but answers the purpose well and may suit many who undertake the production of these beautiful photographic portraits for painting in oil, is given below.

It must be understood that all these portraits, when printed and painted, will show up in a reverse position, i. e., the rights will be lefts, when taken from an ordinary negative, because the portrait is viewed from the back through the glass plate. To bring each portrait so that it may be viewed correctly, the transparency must be made from a reversed negative.

The third method to obtain a matt surface is to squeegee a sheet of silk tissue paper upon the transparency, after the latter has been treated with the weak ammoniacal solution. The way to do

this is as follows:

Producing a Matt Surface with Tissue Paper

Cut a piece of tissue paper 5 x 7 inches for a 5 x 7 inch plate; lay it upon a sheet of good writing paper somewhat larger; hold the tissue paper tightly at one end by gripping the two sheets together; turn on the faucet; hold the upper end of the supporting paper sheet; allow the stream of water to strike the middle of the tissue paper. This will cause one half to lay out flat. Now reverse the position, allowing the water to strike the middle as before. This will cause the other half to lie flat. being well wetted at the same time and held by the sheet of writing paper. Now lower it upon the transparency like the letter U, place the rubber sheeting upon the writing paper support and carefully squeegee all down well. Having accomplished this, carefully remove the rubber sheeting and lay the plate with its tissue paper and paper backing in a horizontal position to become surface dry. The supporting sheet of paper may now be easily removed by lifting one corner, leaving the tissue paper adhering firmly to the plate. Let the plate remain in this position until dry, when it may be made translucent by rubbing the surface over with a small quantity of boiled linseed oil and a tuft

of absorbent cotton or canton flannel. When the oil dries, the tissue paper becomes quite translucent, producing an excellent surface for oil-color painting.

The paper that supports the tissue paper may be passed through the ben-

zine and paraffin solution as used in the China silk, and dried. This procedure will entirely prevent any sticking of the tissue paper either when the surface is dry or entirely dry.

(To be continued)

THE MANAGEMENT OF HANDS

By SIDNEY ALLAN

THE unsatisfactory rendering of hands is one of the drawbacks of photo-portraiture.

It is only at rare occasions that we see a well-shaped hand, well rendered, i. e., correct in drawing (neither inadequately foreshortened nor disproportioned), definite and beautiful in all its details of line and modelling, and right in value, i. e., neither too dark nor too light for the rest of the picture. I recall only few portraits in which the hands were as expressive and at the same time as accurate as in the accompanying studies by Charles Schenck. Even the extreme pictorialists fall short in this respect.

And there is an excuse for it, at least for those portrait photographers whose method and style of work does not permit them to devote more than ten minutes or so to a sitter. There is in every sitting so much to think of, and so much to arrange, that it becomes almost impossible to give the necessary attention to the posing of the hands. Many a photographer may realize the beauty of the human hand as a medium of expression, and yet not be able to carry out his ideas in regard to it.

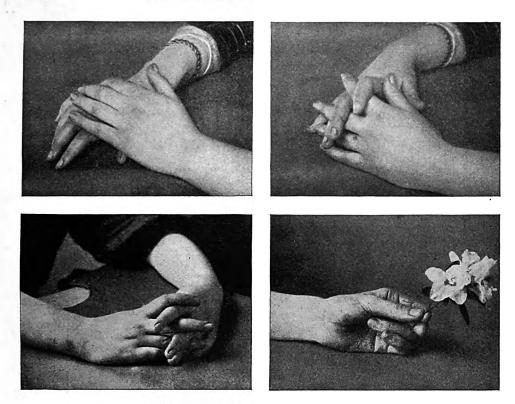
And in that case I would say the best way would be to ignore them completely, to leave them out. I mean this seriously. Hands are not absolutely necessary in a portrait. The Old Masters left them out whenever they could, or treated them in the simplest manner possible, as can be seen, for instance, in the three portraits by Titian. The hands, at least in these instances, did not seem to

have caused much perturbation to the Venetian master.

And yet if there was ever a school of painters who valued the physiognomical significance of the human hand, and were able to discriminate character from the construction and outward appearances of the hands, it was that of the Old Masters. They knew that the whole gamut of human characteristics, of weakness and strength, of timidity kindness, anger, and their opposites could be expressed by the shape of the hands, for every good and evil passion stamps its impression on the form and features of men, and each particular passion has its own expression.

But this has nothing to do with portraiture, and the Old Masters were aware of it. In their big compositions we find the most careful and elaborate rendition of hands, for the figures in those pictures represent elemental emotions and passions, they are character studies under special conditions of life, and do not strive primarily for likeness. In portraits, the hands must be necessarily subordinated to the face. This is an absolute law, that cannot be broken without impunity.

For that reason there are only three ways to approach the subject: (1) to avoid entirely the representation of hands; (2) to delineate them in the simplest fashion without trying to show them in their most characteristic attitude, and (3) to render them in a really impressive manner, to show their most salient features and the line and beauty of their construction.



STUDY OF HANDS, BY CHARLES SCHENCK

The first method is not quite as easy as it seems, as the absence of the hands must not be noticeable at the first glance, it must be absolutely natural. Fig. 2 is a good example. The young man is reading. There is no doubt about that, every bit as much as Fig. 4. His pose is natural, and yet there is no evidence of any hands, and what is more strange, they are not missed. Their introduction would merely have interfered with the simplicity of the composition.

The second method is perhaps the easiest to manage. It should be left largely to the sitter; he should be made to drop his hands with perfect ease, or to place them as habit dictates, without the operator trying to force them into a special attitude. The only photographic law to remember is (as long as lenses are not made more perfect) to bring the hands into the same plane as the face.

The third problem, to give the hands a pictorial significance, is of course the most difficult one.

There are three reasons why a hand is difficult to take: First of all, on account of its intricate anatomical construction. There are too many angles, short undulating lines, and too many minute planes to permit anything but the most careful treatment. Besides, there is the overaccentuation of veins and furrows, which can only be overcome by tricks of elimination. Nearly everything depends on the draw-The outline should be clear and at once explain the particular viewpoint from which it was taken, and the fingers should be always separated as much as possible from each other. Certain positions possible in painting are photographically impossible—as, for instance, the hands clinched into a fist, as in the Franz Hals portraits. They invariably look like stumps. All gestures with fingers bent or drawn together should be avoided. The hands should be posed as much as possible in a way that would give a full view of the dorsal surface









LADY AT THE PIANO (PAINTING) BY STEVENS LADY WITH JEWEL (PAINTING) BY JUNGMAN

PORTRAIT
BY GRAINER
THE VIOLINIST
BY C. RUF

of the hand with extended fingers

(Fig. 5).

The full view of the palmar surface is rather scarce. It somehow lacks expression. The side view is the most animated and picturesque, and therefore strongly to be recommended, only not in full profile, as it then easily assumes the appearance of a claw (Figs. 5 and 7). But it is undoubtedly the most beautiful in line, allowing a variety of curves. The Franz Hals pictures

afford a wonderful opportunity for the study of hand posing. They nearly exhaust the subject.

Another problem in the successful posing of the hand is the lighting. It is nearly always too dark. The hands in the large majority of portraits look like those of negroes. The trouble is that at present nearly all photographers strive too much for tone. They subdue them by force. To me this seems to be an error. I perfectly realize what con-



WATTS, BY STEICHEN PORTRAIT BY C+ RUF

PORTRAIT
BY BERNOULLI
PORTRAIT
BY MAX HERBER

summate skill is required to bring the broken flesh tones of a hand into the right relation with the smoother surface of the face. Yet I am of the opinion that they could be rendered in a much lighter key. If the shape of the hands is pleasing and interesting (as in Figs. 5, 7, and 8), its lighter value does not necessarily interfere with the importance of the face. Blotches would, but not well-defined shapes. In Fig. 8 the hands of the violinist could be a trifle lighter without harming the composition.

The third difficulty is one of costume. In men's coats (also often in women's gowns) the sleeves are nearly always too long. The hand without the wrist is not beautiful. It is rather clumsy looking. The Titian portraits of Isabella d'Este and Frederich of Saxony give an idea of it. The hands of the latter would look less large and fat if the painter had shown the wrists. This shortcoming, of course, can be remedied by pushing the sleeve or garment back, but it is only too often forgotten. The more there is seen of









MANAGING COMMITTEE OF ST. ELIZABETH'S HOSPITAL BY FRANZ HALS

ARCHDUKE OF SAXONY

ISABELLE D'ESTE

PORTRAIT OF A MAN

the arms the finer the composition can become in lines (viz., Davis' portrait).

To comment upon the pictorial significance of all the various attitudes that the hands can assume is, of course, an impossibility. A few hints must suffice.

Hands in a portrait should be either at perfect rest, for instance, lie folded on the lap, or listlessly touching the arm of a chair (Fig. 7) or should depict some arrested motion whose meaning everybody can understand at the first glance; for instance, a man seated at a table

writing, or a lady gathering up the skirt or manipulating the train with a graceful twist. Poses as in Fig. 6, one hand supporting itself on a screen, door knob, mantelpiece, etc., are natural enough, but are apt to take away some interest from the face. The poses should never suggest real action or gestures characteristic of a particular individuality. The portrait would change at once into a story-telling or genre picture. A girl eating candy or fruit is no longer a portrait. The same may be said of women holding their hands behind their



BY CHARLES H. DAVIS, NEW YORK

head, arranging their hair, etc. Such pictures have a decorative tendency, and will only do for fancy heads and ideal studies.

Holding a fan, a flower, a book, etc., is always effective, but I draw my line at statuettes and crystal balls. Those objects belong exclusively to the paraphernalia of the Secessionists. Photographers seem to be very fond of photographing people playing the violin and the piano, and they are right. There the hands become almost the main purpose of the picture, and as the nature of the process of playing affords

great pictorial possibilities, the depiction of musicians with their instruments is really an ideal domain for hand photography.

The hand used as a pendant to the face (Figs. 1, 3) is a modern adjunct to portraiture. Either the palmar (Fig. 1) or the dorsal surface of the hand (Fig. 3) is applied to the chin, forehead, or cheek of the face. It hardly ever helps the delineation of character, but is merely a mannerism of composition applied principally to produce a more picturesque effect.

CARBON PRINTING FOR PROFESSIONALS

By A PRACTICAL PRINTER

PART II

Single Transfer

TAVING made a print, it is well to develop it the same day, for carbon tissue once printed keeps If one knew a print was underprinted it would only be necessary to keep it one or two days to insure its coming out all right. So it will be seen that each day's printing ought to be developed the same day. For single transfer we develop directly upon the final paper or glass, the only transfer being the transfer of the pigment to the chosen support, be it paper, opal, metal or canvas. From the start to the very finish it is as simple as A B C, since we have only to squeegee the print upon the chosen support, develop and dry. single transfer paper be used proceed as follows: Into a tray of luke-warm water throw the print and a piece of single transfer paper, which is paper merely coated with insoluble gelatin to make it adhere to the tissue. When both are limp, lay the transfer paper (it should be a trifle larger than the print) face up on a piece of glass, and upon this place the print pigment side down. By placing one end in position and gradually lowering the print it can be laid on without the sign of a bubble, and this is necessary as it is not possible to squeegee very vigorously else the print might be distorted. Having brought paper and print into contact, place a blotter over them and gently roll the two smooth after which lay the glass containing the print face down upon a dry blotter and put under pressure.

If a number are being done the weight of the glasses will be sufficient, except for a small weight to hold all in position, but if only a few are done a five pound weight will be best. When the bottom print has been under pressure fifteen minutes it is ready to develop. Remove the print and paper from the glass (or glass and all can be immersed should it

not come off readily) and throw the print into water at a temperature of 100° to 110° F., and there let it remain until the paper falls away from the pigment, leaving it upon the single transfer paper. Allow the print to float on the hot water face down, occasionally raising and turning it to aid the more rapid removal of all soluble pigment, changing the water as fast as it becomes much charged with color, until finally the print when held out of water shows all detail and all the high-lights are clear.

When fully developed the drippings from the print will be colorless, showing that all the remaining pigment is insoluble and permanent. It is senseless to try to hurry the development of a print by touching its face with finger or brush; it will only tear the pigment away, for it is very tender at this stage. Rocking will aid a more rapid development, and sometimes hotter water may have to be resorted to, but ordinarily the print is best left to work out its own salvation. I often develop a considerable number until the greater portion of the pigment is removed, and then transfer them to a large trayful of clean water and let them finish by themselves in that, afterward rinsing through alum water and then hanging to dry. Sometimes in case of slight overprinting it is well to direct a gentle stream of quite hot water on obstinate parts and wash away these portions by local treatment. In this case I lay the print on a sheet of glass and pour hot water on parts with a little teapot, and can thus improve high-lights in no small measure; but to do carbon work on a large scale, one must see that the conditions are all favorable for producing prints without any such extra work. Get fresh, soluble tissue, do not oversensitize, develop the same day you print, and all will run smoothly.

Some few colors have to be watched closely as they are none too soluble to begin with and should the dealer keep

them too long they will give trouble. Purple and red have given an occasional trouble this way, but, as stated, if fresh, and one attends to the minor details properly, there will be no cause to complain. If the transfer is made on to opal glass the same process of developing is carried out. Squeegee the print on to the ground side, place under pressure, and then proceed as before. If upon the glazed side or upon glass, watch cases, canvas, etc.—the substance to be transferred to must receive a coating of gelatin first. The formula for single transfer gelatin will be found elsewhere in this paper.

The Double Transfer Process

As has been stated, prints by the single transfer process are reserved when printed from glass negatives, since the back part of the tissue becomes the face of the print. To obviate this we proceed as in single transfer, but develop the print upon waxed paper or glass, so that when developed we can squeegee transfer paper upon it, let it dry and later peel off the print from the support developed on, and as it adheres to the paper last squeegeed on, we have then a nonreversed print face up, that is, the face of the pigment which was in contact with the negative is now on top of the final paper instead of the back, as in single transfer. This double transfer is actually no more work, though from the description it might appear to be: a little more time may elapse ere one has the finished print in hand, but that is practically all.

To prepare the temporary support it is only necessary to wax it. For smooth, glossy prints, transfers from glass or the smooth side of opal will produce the desired results. For smooth but not very glossy prints, waxed paper sold as temporary or flexible support is used, while for matt surface the ground side of opal glass is admirable. A number of waxing solutions are given in the instructions of the various markers, and all answer. prefer one made as follows, as it gives a very thin coating of wax and is reliable: Into 1 ounce of benzole shake 2 drams yellow beeswax shavings. When dissolved, or as nearly dissolved as possible, add 1 ounce each of ether and alcohol. This solution should be rubbed on the temporary support, whatever it may be, glass or paper, with a tuft of cotton-wool. A very little will suffice, two or three drops being ample when rubbed from the center, to coat an 8 x 10 plate. Temporary or flexible support, which is waxed already, must be waxed, with this solution after each transfer. board, which is used in copying presses, forms a very good temporary support when waxed, and either that temporary support or the ground side of opal glass is the best, glossy effects seldom being acceptable in carbon.

One may perhaps settle down upon the matt effect. I like it best of all, and in this case let us see what the difference is between single and double transfer. We have our print, we have an opal of convenient size—a little larger than the print. We pour several drops of waxing solution in its center and briskly rub it over the entire surface, and it rapidly sets. Some then coat this with plain collodion and when set wash until all greasiness has disappeared. It is a good protection, but I do not always use it, the wax being sufficient: still it is a safeguard. Now we wet the print and the prepared opal and squeegee the two together (were we using flexible support we should do exactly the same), placing the two under pressure as in the case of single transfer, developing when pressed fifteen minutes and rinsing it till free of all colored drippings.

Up to this portion of the work it is practically the same as single transfer, but now, instead of leaving the print on the support, we take the measures to reverse it. This is very simply accomplished, as follows: A paper coated with gelatin somewhat like single transfer paper but being rather more sticky is used, called transfer paper. piece of this about the same size as the print to be transferred. Soak it in warm water until quite slimy to the touch, and then transfer it and the print to cold water and bring the two together. Roll the two together well, and set or hang aside to dry. When perfectly dry, and not before, the print will either fall off

the temporary support of its own accord, or it can be peeled off by starting one corner with a knife; and that is all there is to the much dreaded carbon process, save mounting and spotting. keep a portion of the backs of the prints upon which a deal of pigment generally remains in order to have the correct color to spot with. One has a great range in paper for the final support, as we can either purchase double transfer paper of light or heavy grades, or can make it ourselves. I prefer to buy it by the roll, however, as it is not expensive and can be depended upon. I should have stated that before applying the double transfer paper to the print, it (the print) should be soaked a few minutes in a 5 per cent. alum bath (guess-work will do on the strength) to discharge the bichromate salt left in the print and to render the gelatin insoluble, and then rinse before applying.

Enlargements

There is nothing to compare with a carbon enlargement, and owing to their wondrous beauty they appeal to the customer at the first glance. I believe it is well to have a number of them, suitably framed in the place of honor in every studio where carbon work is practiced. As carbon is not sensitive enough to enlarge directly upon, we first make a carbon transparency from a well-finished negative and from this make an enlargement in the camera. For wealth of detail and perfect gradations in tones there can be none too much praise given the carbon transparency, hence it is fit and proper to make the positive to enlarge from in carbon. All who make enlarged negatives even for other than carbon work would do well to make the positive in carbon. For this purpose a special tissue, transparency black, is used. differs from the ordinary tissue only in being made of a very much more finely ground pigment and costs a trifle more.

The print is made as for single transfer, is squeegeed on a plain glass coated with the waxing solution, or albumen, and save that it is printed considerably deeper than it would be for a print, differs in no way from the ordinary work. When dry it may be varnished,

and after the enlarged negative has been made from it, it may be used as a window transparency.

With the special transparency black, lantern slides of the choicest quality are readily made, and providing the negatives are small enough to admit of contact printing, the process is as cheap and easy as any other. I usually coat the glasses with albumen solution, dipping them wholly in and racking to dry, as it is difficult to tell which side is albumenized, and dipping is quite handy. A solution of the white of one egg, well shaken, in eight ounces of water, with drop of strong ammonia added, answers profitably. By adding a little formalin the albumen solution might be made to keep, but it is probably better to make it fresh twice a week. glasses being dry, the prints all made, I wet the latter and squeegee or roll them on to glasses, laying all in a pile and placing a blotter of the right size between each slide. On each pile of twenty-five a weight should be placed, and if one is doing a hundred or so, by the time the last pile is made the first lot is ready to develop. If one has a washing tank of sufficient capacity it will do nicely for developing. If not, a wire cage can be made which will hold the requisite number. About four with a capacity of twenty-five each will be convenient for the average worker. Whatever form is used, it had best be something that will hold the slides vertically. Fill the tank or cage with slides, immerse it in water at about 100° F. and leave the slides there until the backing shows signs of being ready to drop away. Then by gently raising and lowering the cage the paper slips off and the pigment begins to rapidly leave the plate where it is soluble. Changing the water a number of times and raising and lowering the cages, we soon have as fine a lot of slides as ever were made. After the soluble pigment is all washed away, a few minutes' immersion in alum water and a final rinsing completes the The fact that the slides are reversed makes no difference, as it is only a matter of placing the thumb mark accordingly on the finished slide. I do not varnish the slides at all, simply

matting and binding a cover closely down on each slide. Slides made from transparency black will stand oxyhydrogen or electric light, but the colors of the ordinary tissue are not ground sufficiently fine. They are all that could be desired for oil lanterns and form a most agreeable change from black and white, but, as stated, they will not be satisfactory with a light stronger than oil.

Making

While such excellent papers are to be had at reasonable price from the stock house, I do not suppose any would care to make their own unless it might be the single and double transfer paper. However, for the benefit of those who would like to experiment, I append a formula for making tissue as well as those for single and double transfer paper, etc.:

Carbon Tissue

Gelatin			2 oz.
White loaf sugar			3 oz.
Water, hot			40 oz.
Coloring matter .			to suit

Grind up the color with a little of the warm jelly and add to the bulk, which may be kept liquid in a water-bath. Test from time to time by floating a strip of white paper on it and look through it at the gas jet. If the flame can be seen, add more and more color until it cannot. To coat the paper, moisten it slightly and lay it on a sheet of glass, then pour on sufficient of the jelly to coat it amply and level it while setting, after which it may be hung up to dry. Winsor and Newton's moist water colors are almost all suitable for this work; sepia, Indian red, black, and some of the browns being excellent.

Single Transfer

	000	800		w,,,,	<i>y</i> ~.		
			Α				
Gelatin							1 oz.
Water			٠.				20 oz.
Dissolve	in wa	ıter-	batl	h.			
			В				
~ :			ם				00
Chrome	alum		•	•		•	20 gr.
Water							2 oz.

When A and B are thoroughly dissolved, add B to A in very small quantities at a time, stirring vigorously during the whole mixing. Apply to any paper desired, or to metal, canvas or wood.

Double Transfer

	- 1	A.				
Hard gelatin						1 oz.
Water	٠.		•		•	8 oz.
Dissolve in water	er-b	ath	•			,
	1	В				
Chrome alum		•	•	•	•	30 gr.

Add 3 drams of B solution in 2 ounces of water to the entire quantity of A, stirring as it is added little by little. Then float the paper selected on this solution.

Waxing Solution

2 dr.

Yellow beeswax

Benzole	٠.	٠.	٠.	. •		•		1 oz
When dis	ssol	ved	ad	d				
Ether .	•	•	•	•	•	•	•	1 oz.
Alcohol	٠	•	•	•	•	•	٠	1 oz
			4 .	othe	, _r			
			217	1	•			
Benzole								1 oz.
Beeswax								3 gr.
				2				
Turpenti	ne							1 oz.
Dogin			•		-			12 or.

Dissolve separately and mix the two. Pour a little on a flannel rag and rub the surface to be waxed, well polishing with a dry flannel rag.

INTENSIFICATION AND REDUCTION WITH PYRO DEVELOPERS'

By R. B. WILSEY

N the course of a study of the color of photographic negatives developed in pyrogallol developers, it was suggested that the alteration of this color might be utilized as a method of photographic reduction or intensification. It is a matter of common experience among photographers that a pyro-developed negative has a greater printing density and contrast than a neutral negative of equal visual density and contrast. The strength of the pyro color can be varied over a wide range by suitably altering the concentrations of constituents of the developers, especially that of the sulphite. A pyro developer without sulphite gives an extremely yellow negative, while sufficient sulphite can be added to the developer to produce a negative with no visible yellow color.

Several methods of photographic intensification involve bleaching the negative and subsequent redevelopment in a solution which gives it a greater photographic contrast. By redeveloping in a pyro formula the amount of intensification or reduction can, within certain limits, be controlled at will by varying the sulphite concentration of the developer. Where the greatest reduction is desired, redevelopment in some such developer as Elon gives lower photographic contrast than any pyro formula.

For bleaching the negative there are two possibilities: a ferricyanide bleach leaves pyro stain in the negative, while a permanganate bleach removes the stain. Thus, the pyro color may be left in the negative, and more color added by redeveloping in pyro; or the color can be removed and a different amount of color substituted by redeveloping in the proper formula.

The present experiments were made to determine the possibilities of this method and to measure the amounts of intensification or reduction obtained under various conditions. Any intensification or reduction by this method consists in altering the color of the photographic deposit; little change is produced in the visual density values of the negative; therefore, the amount of intensification or reduction must be determined by printing upon some positive material. The printing medium used in these experiments was positive motion-picture film. The negatives to be intensified or reduced were all made upon Seed 30 plates.

The procedure was as follows: An 8 x 10 plate was exposed in the sensitometer to twenty-two steps, in which the exposures increased by successive powers of $\sqrt{2}$. The areas having equal density were about three-eighth inch wide and extended across the short dimension of the plate. This plate was developed. fixed in plain hypo, washed, and dried. It was then cut into eight strips, each 1 x 10 inches; each of these strips contained the same series of densities. Three of these strips received no further treatment. The other five strips were bleached in the same way and each redeveloped in a different formula. When dry, all eight of the strips were mounted together upon an 8 x 10 sheet of clear glass. All the strips were then printed at one time upon an 8 x 10 sheet of positive film, care being taken to print from the "straight-line" portion of the strips upon the "straight-line"

The "straight-line" portion refers to those densities which give the straight-line portion of the H and D curve of the material. The printing light came from the flashed opal-glass window of a white-lined box, illuminated by a gas-filled tungsten lamp. The print was developed in Elon-hydroquinone developer to a gamma of about unity. The resulting densities were read and the density values were plotted against the logarithm of the exposures given the original negative.

portion of the film.

¹ Communication No. 83 from the Research Laboratory of the Eastman Kodak Company.

These curves were the reproduction curves, and show in each case how the final positive rendered the original exposures. The greater portion of each of these curves was a straight line. The ratio of the slope of this line for an intensified or reduced negative to the slope for an untreated negative expresses the degree of intensification or reduction; it is the ratio of the effective photographic contrast of the treated negative to that of the untreated negative. This ratio will be designated as $\frac{\gamma \text{ ip}}{\gamma \text{ op}}$, following the terminology of Nietz and Huse.1 The "effective photographic contrast" means the photographic contrast obtained under the practical conditions of these experiments, and does not mean necessarily true photographic contrast; methods for the determination of true photographic density and contrast are given in "The Spectral Selectivity of Photographic Deposits," by L. A. Jones and the present writer.2

When the value $\frac{\gamma}{\gamma}$ ip is greater than unity the effect has been an increase of photographic contrast or intensification, and where $\frac{\gamma \text{ ip}}{\gamma \text{ op}}$ is less than unity it represents a decrease of photographic contrast, or reduction of the negative.

By the above procedure each strip of a plate was carried through identically the same process except for the bleaching out and redevelopment in various developer formulæ. Any changes in printing contrast observed were due to the bleaching and redevelopment process. All the negative strips of a set were made upon one plate, which was developed as a unit; the final strips of each plate were printed upon one sheet of film, which was developed as a unit. By this method any errors due to variations in development or in photographic materials were minimized.

The original negatives were developed in one or the other of these two formulæ:

¹ A. H. Nietz and K. Huse: The Sensitometry of Photographic Intensification, Jour. Franklin Inst., March, 1918, pp. 389-408. ² Jour. Franklin Inst., February, 1918, pp.

231-267.

Pyro (5-10 Pyro))	5 gm 10 gm 10 gm 1 lite
Elon-hydroquino	NE	(E	H ₈₀)
Elon Hydroquinone Sodium carbonate (dry) Sodium sulphite (dry) Potassium bromide Water to			4 gm. 1 gm. 25 gm. 75 gm. 1.5 gm. 1 liter

The negatives were developed to visual gammas between 0.6 and 1.0. There was no indication that the value of the gamma of the original negative had any effect upon the value of $\frac{\gamma \text{ ip}}{\gamma \text{ op}}$.

The bleaching solutions were made up as follows:

FERRICYANIDE BLEACH

Potassium				. :			10 gm.
Potassium Water to	fer	ric	yan	ide	•	٠	30 gm. 1 liter
TT GLCI CO	•	•	•	•	•	•	* *****

PERMANGANATE BLEACH

Potassium perma Water to				4.5 gm. 1 liter
	E	3		
Sodium chloride				160 gm.
Sulphuric acid				40 c.c.
Water to				1 liter

For use, take A, 1 part; B, 1 part; water, 6 parts.

After bleaching in permanganate the negative is cleared in ½ per cent. solution

of sodium bisulphite.

After bleaching the five strips of each set in ferricyanide or permangante they are exposed to a strong light and redeveloped, one strip in each of these developers: EH₈₀, pyro (5-10-0), pyro (5-10-5), pyro (5-10-10), and pyro (5-10-25); the figures in parentheses represent successively the concentrations of pyro, sodium carbonate, and sodium sulphite in grams per liter of developer.1 The redevelopment was carried to completion, about five minutes usually being sufficient for this.

¹ C. E. K. Mees: A New Method of Writing Developer Formulæ, B. J., 1917, lxiv, 535.

Table I gives the values of $\frac{\gamma}{\gamma} \frac{ip}{op}$ obtained with the various solutions used; each value is the final average obtained from three of four negatives; from one to three prints had been made from each negative.

fication can be obtained upon pyro (5-10-10) negatives by bleaching in ferricyanide and redeveloping in pyro. A pyro (5-10-10) negative can be reduced to almost half its original photographic contrast by bleaching in permanganate solution and redeveloping in

TABLE I

		Ori	igina	al developn	nent	, Original <u>de</u> velopmen	t, Original development	Pyro 5–10–10,
				EH ₈₀ ,		EHao,	pyro 5-10-10, permanganate bleach	ferriovanide bleach
		pe	rma	nganate bl	ach	ferricyanide bleach γ ip	γ ip	γip
				γ <u>1</u> p			$\gamma \overline{op}$	$\frac{\overline{\gamma}}{\gamma}$ op
Redevelopment.				γор		γ op	7 Op	7 00
Pyro 5-10-0 .				2.00		1.70	1.15	1.80
						1.35	.95	1.40
Pyro 5-10-5 .	•	•	•	1.50				1.15
Pyro 5-10-10				1.15		1.15	.80	
Pyro 5-10-25			_	.95		1.00	.65	.95
FH	•	•	•	80		.95	.55	.85

These data are shown graphically in the curves of Figs. 1 and 2, where $\frac{\gamma - ip}{\gamma - op}$ is plotted against the sulphite concentration of the pyro redeveloper.

Table II shows the effect of repeating the process, bleaching each time in ferricyanide and redeveloping in pyro (5-10-0) to increase the amount of color in the negative.

Elon-hydroquinone. Of course, the amount of reduction possible in this way depends upon the amount of color in the original negative. Pyro (5–10–10) gives about the same color as many recommended pyro formulæ.

This method, of course, may be applied with other developing formulæ than those given here. These experiments serve to show the practicability of

Original development Original development.

TABLE II

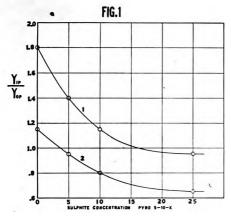
Successive bleachi and redevelopmer pyro 5-10-0	ing nt,												_	EH ₈₀ , eyanide bleach $\frac{\gamma \text{ ip}}{\gamma \text{ op}}$	pyro 5-10-10, ferricyanide bleach $\frac{\gamma \text{ ip}}{\gamma \text{ op}}$
Once										_				1.70	1.80
Twice .		:	:	:	:	Ċ	:	·	:	:				2.10	2.20
Three times												•		2.40	2.45
Four times														2.65	2.70
Five times														2.80	2.85

Thus the process is capable of successful repetition in case the previous treatment has been found insufficient. When the process is repeated several times, care must be taken to avoid injuring the softened gelatin surface.

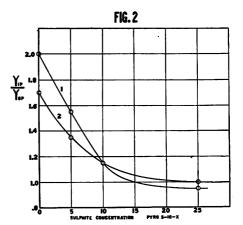
The data of Table I show that the process is suitable for the intensification of either pyro or Elon-hydroquinone negatives and for the reduction of pyro-developed negatives. A slight reduction in an Elon-hydroquinone negative is produced by bleaching in permanganate bleach and redeveloping in Elon-hydroquinone. By redeveloping in pyro any intensification up to double the original photographic contrast can be secured. Nearly as much intensi-

using the pyro color as a means of photographic intensification, or the removal of it as a means of reduction.

The advantages of this method are that, within certain limits, any degree of intensification or reduction can be produced by suitable variations in the sulphite concentration of the pyro redeveloper; furthermore, the amount of intensification or reduction is predetermined; it does not depend upon the time for which the negative is bleached or redeveloped, since these processes are carried to completion. The degree of intensification or reduction that can be obtained by this method compares favorably with that of other methods. Nietz and Huse determined $\frac{\gamma - ip}{\gamma \cdot op}$ for ten



ORIGINAL DEVELOPMENT, PYRO 5-10-10. CURVE 1. FERRICYANIDE BLEACH. CURVE 2, PERMANGANATE BLEACH. REDEVELOPMENT PYRO 5-10-X.



ORIGINAL DEVELOPMENT EHEO CURVE 1, PERMANGANATE BLEACH. CURVE 2, FERRICYANIDE BLEACH. REDEVELOPMENT PYRO 5-10-X.

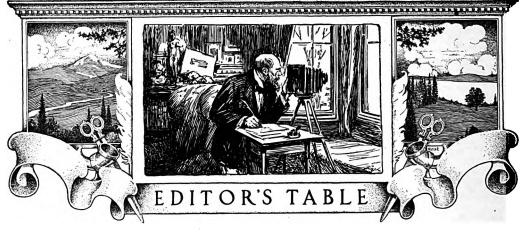
intensifiers; only four of these gave a value exceeding 2, and five of them gave less than 1.5. The fact that the reproduction curves obtained in these experiments have long straight-line por-

tions shows that, over the range of densities used, the reduction or intensification is proportional, that is, the contrast is changed by the same ratio for all parts of the negative.

TWELVE THINGS TO REMEMBER

- 1. The value of time.
- 2. The success of perseverance.
- 3. The pleasure of working.
- 4. The dignity of simplicity.
- 5. The worth of character.
- 6. The power of kindness.
- 7. The influence of example.
- 8. The obligation of duty.
- 9. The wisdom of economy.
- 10. The virtue of patience.
- 11. The joy of originating.
- 12. The profit of experience.

-Door-ways.



THE CUSTOMER'S WELCOME

NE of the first things for a photographer to learn is how to receive and welcome his customers.

A photographer should, with sincerity and dignity, make every caller welcome—in brief, he should exercise tact. If a man is not sincere in his welcome people will notice it. If he does not exercise a certain dignity he will place himself in an inferior position when dealing with the more refined or educated of his customers.

The tact of the reception-room goes far toward the amount of the order. A tactless person quotes prices, and often frightens customers by pushing the claims of platinotype or other highpriced work. Nothing hurts a person with little money more than having to persistently refuse offers of expensive lines when the purse can only stretch to cheaper ones. By all means, keep the better work in sight, even when the chaper is being selected, but don't make the customer feel that there is any suspicion of "no class" about the cheaper work. A photograph is everyday business to you, it is something special to them. A chill at the photographer's is like a wet Fourth of July. But, where the customer can afford, tact can often add some specialty to the order for a dozen cabinets, or may increase the number ordered. Tact If the over-dressed girl has been courteously received and flattered (there has been no need to use a whole dozen plates on her) she tells her friends what she thinks of the nice photographer. The dollar work girl does the same; and such testimonies do no harm. We firmly believe, as the result of a not inconsiderable experience, that the word and good will of a pleased customer is an advertisement well worth having. New business will surely follow satisfaction of this sort.

ACTIVE PREPARATION FOR MORE BUSINESS .

70U do photographic work and you have photographs to sell. trouble is that the people do not seem to want as many pictures as we have the desire to supply them with. And yet it seems that there are some studios that are quite busy, while there are many others that complain that there is little or nothing doing, all of which would indicate that there must be some decided differences either in the personalities or the local conditions. While it does make some difference as to the nature of these causes, what is of greater moment is a little discussion of what might be done to change the conditions.

In reading over a pamphlet of an expert advertising concern we found an article that discussed the matter of advertising at long range and indicated a few of the cardinal principles that underlie all effort to get business and hold it. With the big industries these principles

are made the foundation of systematic study, and the campaigns are planned to fit the individual requirements through methods selected by the various courses of reasoning. Each one goes about it in a different way, and the only measure of the virtue of each method is the success that is obtained.

The fundamental necessity of some form of advertising is the fact that the public will not buy of a certain firm unless it knows that the firm carries the goods it wants. Furthermore, no matter how honest the business may may be, and no matter how excellent and reliable the goods he sells, it will not do any good unless the public is aware of it and has an opportunity to test it. the two things that every successful merchant must do is to let the public know where it can buy certain goods and also to give them a reason for buying at one place rather than another. All of this is considered ample reason for advertising, and the next thing to do is to study how to do it best and most economically.

The systematic advertising that has been proved successful and a wise investment is based upon these five divisions of effort. We may have mentioned this before, but it will stand repeating. The steps that must be considered in every advertising campaign are:

- 1. Attract the attention of the public.
- 2. Arouse public interest.
- 3. Create a desire.

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- 4. Get in touch with those who are interested.
- 5. Complete the deal, and make the sale.

Any advertising that is weak in any one of these divisions is weak in results. The big businesses watch every step in the advertising campaign, and where they find a weak spot they strengthen it The adoption of trademarks and catch phrases are the means of attracting attention. The argument, short and powerful, or the illustration, made as tempting as possible arouses the interest and creates a desire. The offer of some special inducement, or the giving of some attractive literature, or the promise of further information to those who apply get the contact between the seller and the buyer. Then good salesmanship must complete the transaction as soon as the probably buyer is interested and within reach. It is a pretty theory and it is just as pretty a problem to work it out successfully. If you do, you make by it. If you do not even try it, or do not work it out properly, it is a loss. If you want to succeed nowadays, you must do it in some form. So select your method of doing it and take a try. Do not say that you cannot succeed in it until you have tried. We all want some business between now and Christmas and we will have to hustle to get it. Let's hustle some.

CAN WE ELEVATE THE PROFESSION?

FOR many years there has been a growing demand among photographers for a fuller recognition of their chosen profession. Many photographers have spent the best years of their lives trying to elevate photography among the arts. It was decided, however, that the time had not quite arrived. It was even suggested that the time was ripe for the founding of an academy and the conferring of degrees, following the example of painters and architects.

Photography has not yet found its level. There is too wide a gap between the man who is ever striving to excel in his work and uphold the dignity of his calling and the man who employs unscrupulous agents to secure business on a questionable basis.

Unfortunately, the idea prevails that photography offers an opening to an easy method of making money and without the bother of having to spend much time or study in learning the details of its practice. So many men drift into the business with little or no knowledge of its requirements and are content to struggle along without seeking to know more. It would be very different if photographers, like doctors and lawyers, had to qualify before an examining board as to their qualifications before being allowed to practise their profession.

Until there is a better organization and closer coöperation between every

body of photographers, and also between photographic manufacturers and dealers, these unsatisfactory conditions will prevail. Irresponsible, incompetent, and unscrupulous men will float in and out of the profession casting a stigma upon every hard-working and painstaking photographer, and photography will remain in its present unsatisfactory status. There are hopeful signs, however, and every photographer in the land can elevate and uphold the dignity of his profession if he will only think on these things and find the truest expression.

ADVERTISING: ITS NECESSITY

OOD advertising always pays.

Advertising that pays must be good advertising. It may have taken one of a thousand forms, but it was good and it paid.

There are a thousand and one ways to advertise yourself and your work. You can go for medals, cups and trophies at State and National conventions and get for yourself a national reputation—national in the sense that you will be known among the professional photographers who attend conventions and read photographic magazines. After you have made a sufficiently large collection of medals, cups, trophies, etc., you reach the dignity of appearing in print without an initial before your name. This assures your position in the profession and you are one of the "boys."

If your work has caught on with the public as it has with convention judges, you will be in a good way of business and will have a prosperous bank account.

This is assuming, of course, that you have been able to make good use of the publicity and reputation medal winning secures. If you lack the faculty of turning to its fullest advantage every honor gained you may still lack the wherewithal to meet your stockhouse bills.

You can stay at home and attend strictly to business, turning out consistently the best work you are capable of, and you will build up a reputation as a good business man and a competent worker, that in itself will be the best kind of advertising.

Take an active part in all local affairs. Keep your name before your fellow-citizens. Every time your name is mentioned you are being advertised. It may seem very indirect and far away but you never can tell where the lightning will strike.

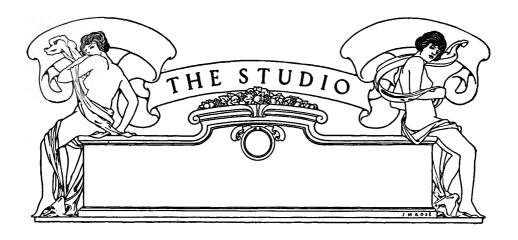
Cultivate your fellow-craftsman. Speak well of him whenever you have an opportunity. This is good advertising for photography and "Nothing is lost that a friend gets."

Aside from the regular forms of advertising, such as newspaper, booklets, special circular letters, etc., there are numerous ways in which the photographer can keep himself quietly but persistently before his present and future customers.

A CHRISTMAS GREETING

OME TO US, CHRISTMAS, GOOD OLD DAY,
SOFTEN US, CHEER US, SAY YOUR SAY
TO HEARTS WHICH THRIFT, TOO EAGER, KEEPS
IN BONDS, WHILE FELLOW-FEELING SLEEPS.
GOOD CHRISTMAS, WHOM OUR CHILDREN LOVE,
WE LOVE YOU, TOO! LIFT US ABOVE
OUR CARES, OUR FEARS, OUR SMALL DESIRES!
OPEN OUR HANDS AND STIR THE FIRES
OF HELPFUL FELLOWSHIP WITHIN US,
AND BACK TO LOVE AND KINDNESS WIN US!

EDWARD SANDFORD MARTIN.



PRACTICAL PAPERS ON STUDIO WORK AND METHODS

Price Cooperation¹ By Edgar M. Atkins

Now that all business is contending with actively changing conditions and the adjustments incident thereto it is a most fitting time for the portrait-making photographic profession to arouse itself to the urgent need of better business

cooperation.

While we have our national and amalgamated associations, the benefits derived from them are largely educational. We need also organizations the purpose of which should be to further the interests of the profession in a business way. Everywhere there are manufacturers' associations, business men's associations, employers' associations, for this purpose; and employees of nearly every industry are organized for the purpose of improving their working conditions and for securing a minimum pay for the work. For the same reasons, professional men, owners and managers of photographic businesses, should have their local associations. The need of business coöperation is self-evident.

I shall make no attempt to enumerate the many benefits to be derived from local associations, but in every community where they do not exist they should be immediately formed, and the moving spirit should be one of good fellowship, coöperation, and mutual help. The question of a minimum price, based on costs, at which portrait photographs should be sold, would be a subject which could properly be brought before

such organizations.

I do not believe in hampering healthy business competition, but I do believe (and I think the profession will agree with me) that there should be a minimum price, based on costs, at which

portrait photographs should be sold.

To charge a certain price, based on costs, per square inch, per dozen prints would be a business-like way of solving this question. If for individual pictures a minimum price were charged of 25 cents per square inch per dozen prints for 4 x 6's and larger sizes, then the minimum price per dozen for 4 x 6's would be exactly \$6.00; for

¹ Copyright, 1919, by Edgar Mason Atkins.

 5×8 's, \$10.00; for 6×8 's, \$12.00; for 6×10 's, \$15.00; for 8×10 's, \$20,00; for 10×14 's, \$35.00; etc. The charge for prints smaller than 4×6 's should increase somewhat as the size decreases. For instance, as a 3×4 print is one-half the size of a 4×6 , the price per square inch should increase one-half of 25 cents or to $37\frac{1}{2}$ cents, making the minimum price per dozen \$4.50. If so small a size as a 2×3 is made, the price should increase over the 3×4 rate to not less than \$3.25 per dozen. A liberal discount, say 50 per cent., should be allowed on passport prints, postcards, and similar work on which no proof is shown. Minimum prices once determined, a rate card could be compiled and supplied, which would obviate any possible confusion.

The charge for making group pictures should increase over the price for individual pictures: For 4×6 's, say, 25 cents per print for each additional person more than one; for twelve or more pictures, with an increased charge per person for larger sizes and a decreased charge for smaller

Sizes

The price for less than dozen lots should be: For one picture, one-third of the dozen price, with one-twelfth of the dozen price added for each additional print wanted up to one-half dozen, and with one twenty-fourth of the dozen price added for each print over six up to twelve; with the result that the price for three pictures would be one-half the dozen price, and for six pictures three-fourths of the dozen price; with the final result that twelve pictures on this basis would amount to exactly the dozen price.

Duplicates: If you have made so good a picture that duplicates are wanted, they should be charged for in dozen lots at the regular dozen price then prevailing. If only a part of a dozen is wanted, the first print should be charged for at one-sixth of the dozen price, with one-twelfth of the dozen price added for each additional print wanted up to eight, and one-sixteenth of the dozen price added for the balance up to twelve; with the result that a full dozen figured on this basis would amount to exactly the dozen price.

This whole plan of charging should be for unmounted prints. At the time of delivery, an effort should be made to sell as many suitable (565)

frames for them as possible, and for the balance of the order the most suitable folders for those particular prints should be sold at cost plus overhead. For if the customer is given to understand that only a small charge will be made for folders the chances are improved for selling higher-priced pictures.

The charge for retouching extra negatives could also be figured on the square-inch basis, depending on the size of the print or negative, with an extra charge per person for group pictures. At 5 cents per square inch for retouching extra negatives, the charge for single heads for 4 x 6's would be, practically, \$1.25.

I do not maintain that the figures I have used to illustrate with should necessarily be adhered to; but I have proposed herein an easily understood and workable plan. It is a businesslike and

scientific method of arriving at prices.

The successful application of this plan of necessity requires genuine cooperation through local associations, where there would be an interchange of ideas and the benefits of just criticism obtained.

Gift Portraits

PHOTOGRAPHERS have not failed as Christmas approaches to point out the desirability of making the seasonable gift take the form of a portrait, but not all of them have realized the necessity for clothing the print in an attractive manner. Many do not make any attempt to present any other styles than those they use all the year round, and these are often a little too plain for the particular purpose. When we note the taste and care with which jewellery, draper's goods, and even chocolates are packed, a photograph stuck upon a piece of brown paper has anything but a festive appearance, and we think that in many cases increased business would result from the introduction of more elaborate styles of entourage. We believe the public would welcome a smaller picture in a very good quality of folder in place of a large print plainly mounted at the same price. Large prints call for very careful and substantial packing, and even then are liable Another direction in to damage in transit. which business might be extended is that of colored work. There are now many well-trained colorists available, so that it should not be difficult with a good-class clientéle to sell colored prints by the dozen instead of by the unit as we do now.

The approach of winter gives the opportunity for the display of a few specimens of a style which is not often in evidence nowadays. refer to the firelight effects which some photographers have produced very successfully, although others have been deterred by the fear that elaborate arrangements were necessary for lighting. This may be true if daylight only is available, but with artificial light there is no difficulty, as the light can easily be transferred to any desired position so as to give the effect of the glow from an ordinary fireplace. To our mind this style is most effective on whole-plate or larger sizes, and as cold tones are desirable enlargements may be made upon a "carbon" or velvet surfaced bromide paper, which, when dyed, gives an excellent result. One thing to be avoided is a pinkish tint in the dye used, as this quite spoils the firelight effect. A deep orange is perhaps the best color, and sometimes this is improved by a dip in a weak solution of ordinary red ink. Such pictures are best framed close up in dark oak, but in any case a light mount should be avoided.—B. J.

A Practical Suggestion

RECENTLY I came across a "stunt" which I consider excellent advertising, hence am passing it along for what it is worth. A young man who had bought out the business of an old-established photographer, business over forty years, in looking over the negatives, found quite a number of carte-de-visite size of babies.

Upon investigation, he learned that fifty represented men and women, some prominent, some otherwise, still living and residents of the town, of whom there were also negatives made

in recent years.

Securing the permission of the people these negatives represented, he made prints of both baby and grown-up and, placing them upon dis-play in the show-window of a very large department store (that was only too willing to give the space), offered prizes in the form of photographs of those who could successfully match up the most of the old and the new, no names being placed on the pictures.

The photographer told me it was the greatest business-getter he had ever seen in his entire experience, and he had been an employee in some of the best studios in the United States for over a dozen years. Not only did he get business from the people who saw the photographs, but everyone of the exhibited pictures or rather duplicates of them were sold, not only to the people they represented, but to their sisters, brothers, cousins, aunts, etc., and he received,

as well, gratuitous newspaper write ups.
"Go thou and do likewise," if you have the negatives (not necessarily carte-de-visites) the babies, and many of you have.—CHAS. H. KIRSCHNER, in Professional Photographer.

Pointers on Composition

A portrain is the record of a person at a certain age, in a certain mood, in a certain garb. A good print is the result of what has happened in the studio previous to pressing the bulb.

One of the most, if not the most important factor in arranging the composition of a portrait

is the correct placing of the head.

It is a fundamental rule that the face should never be placed in the center of the picture.

A portrait (in particular, a bust portrait) should be as simple as possible. It should explain itself at first glaince.

Never use the profile view unless the face warrants it.

The unsatisfactory rendering of hands is one of the drawbacks of photographic portraiture. A background always consists of two masses,

one lighter than the other.

The trouble with the painted-in backgrounds that have lately become so fashionable in photography is that they are not made by trained

In groups, the people must do something, or be interested in something, or the result will, in nine out of ten cases, prove unsatisfactory

In photographic portraiture, the simple light

effects are the best

The face should present the largest lighted

plane in a portrait.

The larger the range of light and shade, the more accurate in expression, in construction, and modelling the face will become.

The strongest high-lights on accessories always sacrifice something of the likeness to a pictorial

effect.

Portrait photography has become more pictorial, but less clear and precise in expression.

The keynote of color in the human face is light,

and it should be rendered in that way.

The majority of portraits today look as if the people depicted were mulattos or quadroons, which is not particularly flattering to the sitter.

The shadows of a hat can be used to great advantage as an eliminator of details in the hair.

The mother and child picture is apt to produce an emotional effect, and the better it does this the more satisfactory is the portrait as a picture.

The most natural and generally accepted method of placing the heads (in a mother and child picture) is to place the head of the mother higher than that of the child.

In draping, everything depends on lines that flow freely, that do not obscure the form, yet do

not show it too clearly.

The less use you make of furniture the better

you and your pictures will fare.

In photography, the representation of one picture in another should always be avoided.

Expression

When people speak of expression in a portrait they usually mean facial expression; but nobody will deny that the pose also may express certain sentiments. Facial expression however, is a universal language equally understood by the lowly in mental endowment and by the brilliant intellectual. One has only to witness the inspection of a family album by an ordinary person to note that, apart from details of dress, every print stands or falls by the "niceness" of the face. This is a fact to be reckoned with in portraiture. It is reckoned with, but in a way that has unfortunately put a stigma upon professional photography which it will take many years to remove.

The factor that tells in a portrait is the human touch. Every sitter possesses it, for every sitter Yet it is usually cleaned out of the professional production by that indispensable evil, the retoucher, who busies herself with quite another factor altogether, to wit, good looks. What she achieves in the way of good looks she gets at the expense of the human note, because she alters the very conditions that make for character in order to coerce them to her own particular idea of what good looks consist in. The result is an average, a formula, arrived at by rote, and necessarily the very antithesis of character which depends upon individual traits and involves the human note.

That particular fascination in a portrait which can prompt a lady to appraise a print by such a phrase as "He has a nice face!" depends more upon individuality than upon a general pattern of good looks. If this fact could be more widely recognized, the activities of the retoucher would certainly be held somewhat in check by the proprietors of businesses. And here reference must again be made to the amateur who, in all his revolutionary practises, has lit upon none more creditable than his practical aloofness from retouching" as it is understood in the profession.

What does the "nice face" signify? Most of all, perhaps, it denotes a kindly expression. In photography the kindly disposed person is one with whom the world goes well for the moment. Contentment, happiness, tolerance, benignity, and may be a touch of humor, are certainly possible conditions. But are these to be got at the pencil-point? Is it not more to the purpose to work upon the face by abstract means, before the sitting commences: to interest and please the client by the comforts of the studio and the

amenities of the occasion?

A recommendation to the sitter to look pleasant is no doubt now almost a thing of the past. In view of its utter unreasonableness and absurdity, it is a wonder that it was ever accepted and practiced as a method. Its results were too often seen in the vacuous grin which was only one degree worse than the bored expression it was supposed to supplant. There are a number of people today who confess to hating a smiling portrait; an antipathy due doubtless to the surviving prevalence of the studio smirk. itself, an interested and contented expression does not amount to a smile at any time, and certainly it cannot be simulated with conviction at the behest of the operator.

It is, nevertheless, quite essential that the sitter should not appear to be ill-tempered, for a morose expression will not give a face its best chance, and moreoever will certainly reflect afterward upon the sitter's state of mind in the studio to the photographer's disadvantage, But there are many people who normally look rather serious, and, in the case of men, even severe. Some of the finest portraits ever produced are numbered in this class. What objection can there be to such expressions if they convey character? The truth is that the serious countenance in a portrait wears far better than the smiling one. How tired we have become of the actress with her eternal "glad eye" and glad array of teeth!

There should be no doubt as to the best ideal for portrait photographers who wish to make a reputation for high-class work. It is a noteworthy fact that in the whole range of painted portraits of the best periods smiling faces are in an extremely small minority; while the heads of ladies in the "Books of Beauty" and the "Keepsakes" of a past generation not celebrated for the highest flights into art, are almost invariably embellished with a simper. One of the severest trials to the lover of pictures is the sardonic joviality of that "Laughing Cavalier" by Hals, which continued reproduction has so deplorably hackneyed into the commonplace. Compare it with the sad dignity of any portrait of Charles I by Van Dyck, who knew so well how to convey in the king's expression the quiet

wisdom of a life's experiences! What was advanced in the previous article with regard to the "waiting phase" of an action is equally apt as to the expression of a face. For that also must be something that a spectator may look at without any feeling that the time is due for the next change, and without his consequent resentment of there being no change. It is the defeated expectation of a further stage in expression which annoys us in the "Laughing Cavalier." A normal expression involves no such danger. It is a starting place for developments. Its calm and its readiness convey the same temporarily inactive alertness which serves the photographer's purpose so well in posing. Life is portrayed, but it is the life of a moment of thought before action. Such an expression is certainly the safest for a portrait which is to last. It was the usual achievement of D. O. Hill, and one of the causes of his great success in character representation.

The painter Lenbach, who won great reputation for protraits of the psychological type, concentrated his energies upon the rendering of the eyes. He gave them importance largely by sub-ordinating the other features. Such a method would never do in photography; but the fact remains that the eyes are the very windows of the soul, and therefore due regard should be given to them when the pose and lighting are under consideration. Usually they are most eloquent when full and open, but partly in a

cast shadow.

There is, however, but one royal road to good expression, and that is a sunny one along which the photographer must lead the sitter.—F. C. TILNEY, in Professional Photographer.

Value of Good Appearance

THE old maxim: "Appearances don't count," should be taken by photographers with the proverbial grain of salt. As a matter of fact, in photography appearances count for a great deal.

You know perfectly well that you could set a white and flawless diamond in a common brass setting, and the average person would look upon it as paste, and pass it by. The diamond expert, of course, would at once perceive its true value—but diamond experts are not common. It is just the same in your business. You may

make "tip-top" pictures; the posing, lighting, printing and everything may be firstclass, but if you mount your "tip-top" pictures on cheap, inappropriate mounts, away goes their value in the eyes of 90 per cent. of your customers. True enough, the art critic or picture expert would notice their merits. The vast majority of your customers, however, are not art critics or picture experts, and if you want them to appreciate your good work at its full value, you must make it appear as good work when you present it to them. You must dress your pictures to correspond with your ideas of their value, because the money-spending public will value the quality of your picture-gems by their settings.

Take one of your best prints, put it on a cheap,

common-looking mount, and its market value becomes nothing more than the value suggested by the mount. Put the same print, however, on an up-to-date artistic mount, or in a dainty appropriate folder, and its value at once rises to whatever your customers are prepared to pay for high-class work. The difference in the cost of production is very small, but the difference in the pet profit is enormous.

There is no part of your work where appearances count so much as in the mounting of your For this reason you should select pictures. your mounts with the greatest care and dis-crimination. If the man down the street fills his window or showcase with a new line of mounts, don't copy his particular style, but try to go one better in daintiness, good taste and

Don't be mislead; appearances do count.— Professional Photographer.

The Perfect Man

What a difference there is in men and what a difference there is in the letters which they write. For over twenty-five years we have been looking for a perfect man that we might send him out as a salesman. If he is ever found he can get from us whatever price he wishes to charge. Elbert Hubbard said, "Show me the man

who never made a mistake and I will show you a

dead one.

Now the letters which we receive, many of them are very courteous, they are as full of the heart as they are of the head. People write to us just as they would talk to us. They tell us what they want and ask us to help them out and if a mistake has been made on our part or their part they want to know the best way for both of us to get the matter straightened out. These are heart-to-heart or face-to-face talks. Then are heart-to-heart or face-to-face talks. there are people who write in an entirely different way than they would talk to you, everybody else is wrong, they are always right, they never made a mistake themselves and never expect any one else to make one. Some of them seem to be stock letters taken from some antiquated book, not that they mean anything, it is simply a habit of writing.

We believe it is a good plan in writing letters to use only the words that would be used in conversation. Just as many mistakes are made at one end of the line as the other. We try to have all of our letters to go out plain enough so that

everybody can understand them.

It is perfectly natural when you get a letter that seems to be a little different from what you expected to answer it in the same tone. We try not to do this.

We are always glad to receive letters, especially regarding any mistakes we have made, for that is the best way in the world to teach us and those

in our employ to correct mistakes.

Some letters which we receive tell us just exactly what the subscriber wants and some give such a poor description that we must guess at it if we send out the goods. Sometimes we guess right and sometimes we guess wrong.

Write to us just as if you were talking to us and then we think there will be no mistakes .-

Ohio Photo News.



The Professional Photographers' Society of New York

THE first convention of the year will be held at Hotel McAlpin, New York City, February 3, 4 and 5, 1920. Lejaren A. Hiller, a genius in the art of illustration by photography, will appear at the convention of the Professional Photographers' Society of New York, February 3, 4 and 5, 1920, at Hotel McAlpin, New York City.

Pasquale S. Culotta, expert in photography by artificial light, will demonstrate at the Convention, and there will be other practical and helpful demonstrations. A full announcement and program will appear in the January JOURNAL.

Market Prices

Just a little shake up to let you know how fortunate we of the photographic profession have been through the war period. The past thirty days have witnessed some price changes that are more pressing on general trade than any that have occurred since the big chemical flurry at the very beginning of things way back in 1914 and 1915.

Plates and portrait films have been advanced. The radical part of it lies in the fact that the list price, which had been in effect since the memory of dry plates, has been changed to a higher level, and with slight modification of discounts the net prices show an advance of approximately 20 per cent. on glass plates. On another page we give the new list price and also the discount schedule.

It has been a matter of general knowledge that all of the raw materials that went into the making of plates and films had advanced in price from 75 per cent. to 150 per cent., but the expectation of an advance had been held in suspense for so long a time that we had begun to hope that we would pull through without it becoming necessary to advance plates. Now that it has come, we can truly say that it is very evident that photographers have been given the benefit of stocks of raw materials accumulated at prewar prices, and that the price of our principal item of supply was not advanced until it was absolutely necessary. Such as it is, we can take consolation in this fact.

In apparatus there have been advances here and there: the principal items being view cameras

and view outfits, Kodaks, Premos, and such sundries as print-trimmers, timing-clocks, negative pencils, etc. In cameras and Kodaks the advance counting in the war tax figures out about 20 per cent. above the last printed prices of February, 1919.

Chemicals have continued their gradual reduction toward pre-war levels. They have not quite arrived yet, and it will probably be a long time before they get to former levels all through the list. Bromide of potassium has had its meteoric rise and fall of from 55 cents per pound before the war to a maximum of \$6.00 per pound, then down again to 90 cents. The other potassiums followed more or less with bromide, but were not quite so rapid nor spectacular, as they are not used in such Hypo-sulphite of soda stays firm quantities. around \$5.50 per 100 pounds. Metol equivalents are coming along in a steady stream, and a new one pops up about once a month. It is manifestly impossible to give a broad trial to all of them as they appear, but the production of these developers gives us confidence that the United States is in no danger of every being dependent upon foreign manufacture of developing agents again.
The latest revival is rhodol. This developer

The latest revival is rhodol. This developer is the same as was furnished before the war in competition with metol, and its reputation is assured and tried.

Card-stock shows no indication of any reduction in price until well into the new year, if then. It was expected that the paper market would react by this winter, but it holds fast to the scale of prices reached during the past summer. We are notified that production of cards and folders will be at maximum quantity through the fall, and that orders already received are sufficient to take care of the output. This will mean that deliveries will be not much better than last year, and again we advise our readers to calculate their requirements on the staples and endeavor to be prepared to have the goods in the house for holiday trade.

Azo postals are no longer supplied in 5000 cases at \$26.25. They are now offered in 500 sheet packages at the rate of \$7.00 per thousand or \$35.00 per 5000. This is the only change in developing papers up to date.

Not only in photographic products, but in all other lines of manufacture, the demand keeps just about one lap ahead of production, and so

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long as this condition exists, there is but little chance for a downward revision of prices. In casting about for the cause and reason for this we feel convinced that there is something more than home consumption that is responsible. The publication of the United States statistics of imports and exports shows that during the past year we exported in round figures some seven billion dollars worth of goods. This tops any previous records, and it might be well to recollect that these exports are not war supplies, but are food supplies, raw materials and manufactures of various sorts. This would mean that until Europe gets back to producing for herself, we in this country must supply a generous share of the articles needed by the peoples in the devastated countries. They do not want to buy, nor do we want to sell, such large quantities of goods that they must send their surplus money to this country and we must send our surplus goods abroad. It is hard for them and hard for us, but we may rest assured that they will resume production at the earliest possible moment. Our exports will then return to more normal figures, and we will then be able to supply our own requirements and get our prices to a more normal basis.—Trade News.

St. Louis Photographers Organize

THE latest city to report the formation of its professional photographers into a body is St. Louis, Missouri. The title of the new organization is the Associated Photographers of St. Louis, and they held an exhibit of portraiture under the auspices of the St. Louis Art League in the Southern Hotel Building from October 12 to November 15, 1919.

Members of the new society are: O. C. Conkling, F. C. Delport, Gerhard Sisters, E. R. Jennings, T. Kajiwara, Theo. Ragu, J. Edward Rosch, John A. Ruth, Schweig Studio, Van Miller Studio, F. M. White, Sid Whiting, Phil.

De Woskin.

A New Phenomenon: "Photographic" Images by Heat

In the September number of the Journal of the Chemical Society appears an article by Messrs. Donald Neil McArthur and Alfred Walter Stewart, giving preliminary notice of experiments of great photographic interest. The results so far obtained are so extraordinary in character that they may turn out to be of far-reaching

importance.

An ordinary dry plate is placed, film upward, at the bottom of a light-tight box; two or three glass microscopic slides are placed on the film as a support for a negative, also film side upward. The box is then closed, and placed near a source of heat, such as a Bunsen burner, a naked gas flame, or an electric heater. After some hours exposure to heat in this way the plate is developed and gives a positive image. No light penetrates the box, and precautions are taken against any possibility of radio activity.

The time taken to produce the result varies according to the nature of the source of heat, and is also modified by the distance of the plate

from this source.

Although the effect produced is exactly similar to that resulting from light action, there is one very striking point of dissimilarity. This is, that the result is in no way affected when the plate is placed between the negative and the source of heat, instead of beyond the negative. This arrangement would almost certainly result in a fogging of the plate, instead of the production of a positive image, if there were any question of direct acting rays of some kind.

Experiments are to be continued, as the results already obtained are so unusual as to warrant further investigation of phenomena, which may open up new and hitherto unexplored fields.

Meetings in Missouri Valley Association's Jurisdiction

HENRY MOORE, president of the Missouri Valley Photographers' Association, is working out a plan to get the photographers of his territory (Missouri, Nebraska, Kansas) together in small district meetings, once or twice a year, where they can get better acquainted and talk over matters of general interest to the profession. These meetings will be similar to the club meetings that are in such general favor in many parts of the country today, except that all photographers in a certain district will be invited and expected to participate instead of only one from a town, as is the case with the photographic clubs. Mr. Moore has suggested, as a starter, four different districts or groups of towns in Missouri, which he has asked us to publish this monthothers will be added as the interest warrantsand it is his desire that all three of the Missouri Valley States, Missouri, Nebraska and Kansas, fall in line on this movement as soon as possible and get their organizations under way. Get in touch with him at once and help him form other groups.

Group No. 1, to be known as Central Missouri District, consists of the following towns (subject to additions by requests from any photographer in a nearby town): Clinton, Windsor, Warrensburg, Bunceton, Versailles, Appleton City, Sedalia, Tipton, Clarksburg, California, Holden, Knobnoster, Sweet Springs, Marshall, Gigginsville and Cole Camp.

Group No. 2.—Southeast Missouri District: Group No. 2.—Southeast Missouri District: Sikeston, Girardeau, Perryville, Fredericktown, Cape Girardeau, Jackson, Bonne Terre, Dexter, Illmo, Kennett, Campbell, Poplar Bluff, Caruthersville, Flat River, Ironton, Festus, Bloomfield, Charleston and St. Genevieve.

Group No. 3—Northeast Missouri District: Columbia, New Franklin, Paris, Monroe City, Clarence, Fayette, Shelbyville, Kirksville La Plata Macon, Huntaville, Moberly, Salisbury,

Plata, Macon, Huntsville, Moberly, Salisbury,

Higbee, Centralia and Mexico.
Group No. 4—Northwest Missouri District: Unionville, Gallatin, Albany, Pattonsburg, Lawson, Marceline, Trenton, Cameron, Princeton, Chillicothe, Brookfield, Lenneus, Milan, Breck-enridge and Hamilton.

Mr. Moore wants it understood that there will be no dues, but that each photographer is to pay all of his own expenses and the photographer or photographers in the towns in which the meetings are held will advertise the meeting locally at their own expense for the good they get out of it. It is the intention, or we believe one of the conditions of membership, that each one attending these meetings bring a few samples of his work to be displayed, and the public will be invited to view them and offer suggestions and criticisms. There will be a program worked out that will be of interest to all.

This is a fine movement and if the proper interest is given it by the photographers will result in much good.—Mo. Valley Photog.

The Annual Pittsburg Salon

THE Seventh Annual Pittsburg Salon of Pictorial Photography will be held in the Department of Fine Arts of the Carnegie Institute, Pittsburg, Pa., March 1 to 31, 1920, inclusive.

All prints submitted will be passed upon by an impartial and thoroughly competent committee of selection. Prints possessing the highest merits in artistic expression and execution will be hung.

As has been our rule heretofore, no picture will be eligible that has been exhibited before in the United States.

Entry forms, containing full information and conditions of the Salon, may be obtained by addressing Charles K. Archer, Secretary, 1412 Carnegie Building, Pittsburg, Pa. Last day of entry, Tuesday, February 10, 1920.

The Use of the Anastigmat Lens

On looking over the new Wollensak catalogue we notice one lens in particular that seems to be well adapted to the needs of the amateur where price is a consideration. This is a lens known as Wollensak, Series V, Anastigmat, f/7.5. It is furnished in cells that are readily interchangeable with the R.R. Lens cells on the standard kodaks, Ansco and Seneca hand cameras, as well as many other popular makes, at a cost that ranges from \$8.00 for the $2\frac{1}{4} \times 3\frac{1}{4}$ size to \$10.00 for the post-card size. It is also supplied with standard Wollensak shutters at only a slightly greater price.

Of course the speed of this is not as great as the higher-priced Velostigmats and anastigmats, but is nevertheless better than that of the ordinary R.R., and the definition rendered is so much superior that it is well worth the consideration of any amateur who is after better results.

If you are interested in this outfit or other Anastigmat lenses for your hand camera or larger view boxes, the Wollensak Optical Company, of Rochester, N. Y., would no doubt be glad to send you a catalogue further describing their various lenses.

The Twelfth Scottish National Salon

THE Scottish Salon is held each year in a different center in Scotland, and is composed exclusively of selected work by Scotch residents, or those of Scottish birth living elsewhere. They also have at each salon the work of some invited workers of other nationality. This year a number of American pictorialists have been asked to show their work at the forthcoming exhibition, to be held in Glasgow from December 20, 1919,

to January 24, 1920, at People's Palace Galleries. This manifestation of friendliness for American photographic artists and interest in their efforts is highly appreciated in this country.

Own the Camp Studio

AL. Downs RICE and J. Stuart Husband have purchased the interest of A. N. Camp in the Camp Art Company, Jamestown, New York, and will continue the business under the same name. Mr. Camp has been engaged in the photographic business for the past thirty-four years, coming here from Mansfield, O., and taking over the studio of I. W. Upham in 1885.

years, coming here from Mansfield, O., and taking over the studio of J. W. Upham in 1885.

Mr. Rice is a son of M. P. Rice, one of the leading photographers of Washington, D. C., from the time of Lincoln and was associated with his father for several years following his graduation from high school in 1889. He established a studio at Danville, Va., in 1896, and was engaged in business here for four years, going to New York City in 1900 to enter the employ of the Sarony studios. He came to Jamestown from New York in 1906, entering the employ of A. N. Camp and becoming a member of the Camp Art Company when that corporation was formed in 1910. He is the president of the Professional Photographers' Society of New York, which is planning for its annual convention in New York City in February.

Mr. Husband learned the business in the Camp studio, which he entered nineteen years ago, and has been with the concern continuously since that time. He has made a special study of commercial work and will devote much of his time to that end of the business. He was admitted to membership in the Camp Art Company when it was incorporated in 1910

it was incorporated in 1910.

Messrs. Rice and Husband will continue the business along the same general lines as in the past, and, with a completely equipped studio, are prepared to produce the best results in the various branches of photography.

"Key Industries" in America

Optical Glass

Ur to the end of 1917 optical glass was not manufactured in the United States. It was imported, rough cut or unwrought, principally from Germany, where a great industry had been developed after years of scientific research and experiment. In 1913 the United States imports of optical glass plates and discs were valued at \$506,594 and in 1914 at \$617,703 of which 50 per cent. came from Germany and 27 per cent. from Great Britain. During 1915 the imports from Germany were fairly well maintained, and those from this country increased, but in 1916 Germany practically disappeared as a source of supply. In 1917 the United States entered the war, and the naval and military demands for optical instruments compelled the home production of suitable varieties of glass. The Carnegie Institution and the United States Bureau of Standards coöperated with four American manufacturers, and sufficient supplies of five types of glass were produced in 1918 to meet, with the imports from Great Britain and

France, the requirements of the army and navy. By April the industry had so far got upon its feet as to turn out 28,157 pounds of glass. Thenceforward progress was rapid; 46,538 pounds in May, 85,295 pounds in June, 93,239 pounds in August, and, finally 95,563 pounds in October. The principal types produced were ordinary crown, boro-silicate, barium crown,

light flint and dense flint.

All the varieties of optical glass required for domestic consumption have not yet been produced in America. The country was obliged, even in 1918, to import about half the pre-war consumption of unwrought glass, and a large number of optical instruments. It is pointed out that the Jena works in Germany required five years of scientific research and experiment before developing twenty-eight new types of glass, and that before the war Jena was practically without a competitor. America could not, therefore, expect in less than three years to reach the level of knowledge and efficiency occupied by Germany. The report contains a description of the process by which, during 1918, the manufacture of the glass in the pots was completed in twenty-four hours, a saving of a day on the old method. The more rapid American method, due chiefly to early stirring, is claimed to yield optical glass of the best quality, wholly free from bubbles, of greatly improved color, and also more free from striæ.

Unwrought optical glass is admitted duty free; glass in a finished state and as part of optical instruments is also free of duty when imported by educational institutions for their own use. The glass producers now desire protection in order that the new industry may be developed.

Chemical Glassware

Before 1915 practically all the chemical glass utensils used in America were imported, mainly from Germany and Austria. Since that year the industry has been established in America, where seven firms now produce factory-blown ware, and upward of ten shops are engaged upon lamp-blown and volumetric ware. Not only are American factories now supplying the domestic demand, but during 1918 they exported chemical glassware to more than seventeen foreign countries. In 1913 the imports were estimated to range between \$1,200,000 and \$1,500,000. By 1915 the United States produced \$950,319 worth in their own shops and factories, and by 1918 the home production had gone up to \$2,865,774. There are no factories in America engaged exclusively in producing chemical hollow glassware, and it does not form a large part of the operations in the old-established factories, which since the war began have taken up the

work. There have been no imports since 1915, and during the second half of 1917 the United States became exporters for the first time in their history.

their history.

Imported chemical glass utensils, if used for manufacturing and commercial purposes, are subject to a duty of 45 per cent. ad valorem. They are duty free if imported for the use of educational institutions. Before the war some two-fifths of the imports were duty free. The manufacturers now urge that this provision for educational imports should be withdrawn and all chemical glassware made dutiable at 45 per cent. ad valorem.

Potash

In 1913 the United States imported 270,720 short tons (2000 pounds) of actual potash content (K_2O) of potash salts. Of this total over 99 per cent. came from Germany, and there was no potash industry in the United States. Since then the imports have declined almost to a vanishing point, and during 1918 there were seventy-eight firms engaged upon the production of potash compounds. Their output was 192,587 short tons of crude material, containing 52,135 short tons of K_2O .

The newly developed American supplies of potash are derived from many sources and are the result of many processes. In some cases the substance is a by-product of other industries; in others it is the primary product. During 1915 the work done was chiefly experimental and commercial production did not really start until the following year. The output then rapidly advanced. In 1916 the quantity of K₂O was 9720 short tons, in 1917 it was 32,573 short tons,

and in 1918 it was 52,135 short tons.

The United States were fortunate in possessing vast natural salt deposits and brines, and these formed the principal sources whence potash was drawn. The largest production came from the alkali lakes in the sandhill region of northern Nebraska. The brine was pumped, the water driven off by heat, and the mixed salts recovered. They contained some 20 to 30 per cent. of potash. For the future it is expected that most of the potash will come from the semi-solid Searles Lake, California, and the Salduro Salt Marsh, Utah. During 1918 the actual potash derived from the natural brines was 39,255 short tons, or 75 per cent. of the whole output. The principal other sources were alunite dust from cement mills, kelp and molasses-distilling waste. Blastfurnace dust, as a store whence potash may be derived, appears to have been the subject of experiment, but the amount of potash yielded so far is small. It is, however, regarded as a source promising good results in the future.— Board of Trade Journal.



WORKROOM

ONTAINING THE LATEST PROCESSES, FORMULAE AND APPLIANCES NEEDFUL IN THE ART OF PHOTOGRAPHY FOR THE OPERATOR & WORKER

Printing upon Canvas Storing Sensitive Papers Sensitizing Canvas Colors in Lantern Slides High Relief Irom Portrait Negatives Practical Washing Green Tones Rapid Stand Development Developer or Fixative Stains Carbon Prints on Japanese Paper and Vellum Practical Studio Helps Blocking-Out Workshop Jobs The Carbro Printing Process Photographic Materials and Processes Patent News



THE WORKROOM

By the Head Operator



Printing upon Canvas

Sometimes the photographer is desirous of making a print upon canvas that has been pre-

pared for the artist for oil painting.

One method which is very good is to make the print in carbon, and transfer this print to the canvas, or to develop the print direct upon the canvas by what is known as the single transfer process. This is not easy to perform by those who are not familiar with the carbon process. There is another way by which an excellent picture can be made upon the artist's canvas, and allowed to remain as a plain photograph or

used as a base for painting in oil color.

The process to be described is very simple and easy in manipulation; so much so that any person not previously acquainted with photographic manipulations can take the work in hand without fear of failure, and make a good picture. The piece of canvas that is to be operated upon must be laid out flat upon a sheet of glass, the painted face up. This can be held by the four corners with four clean wooden clips. The surface must now be well rubbed out with a tuft of absorbent cotton soaked in pure alcohol; that known as rectified spirit is just the thing. A piece of clean board will answer instead of glass, but the latter is to be preferred because the clips take on a better hold.

The surface must be rubbed over well in circles, continuing until any trace of greasiness dis-appears; then wipe the excess of spirit off by dabbing the surface. Take care not to rub the surface too hard, or the surface of the canvas may become bared; the canvas would then be spoiled. The surface, after the dabbing, must be washed by carefully pouring clean water over it, taking care not to allow the water to run between the

canvas and the glass plate.

As soon as this is dry the surface must be coated with the following preparation:

Distilled water					6 oz.
Hard gelatin					8 gr.
Chloride of ami	nor	niun	n		18 gm.
Citric acid (pov	vde:	red)			4 gm.
Alcohol					1 dr.

The alcohol must be added last, after the mixture has been heated and stirred well so as to secure complete incorporation. The above mixture must be filtered while still warm, and applied to the canvas in the following way: Place the canvas in a suitable tray, so that the ends and sides are turned up to form a kind of tray in itself. The above mixture is applied by pouring it on the canvas, allowing it to stand for about one minute; then pour the excess off from one corner; then lift the canvas and suspend it to dry.

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Several pieces should be prepared in this manner, and kept ready for sensitizing; the drying must be conducted away from heat and dust. As soon as the surface is dry it will be ready for sensitizing. If the canvas is prepared in the evening, it will be dry and fit for use the following morning. The sensitizing solution is made up of

Nitrate of silver . 200 gm. Distilled water 4 oz.

To sensitize the canvas, all that is necessary is to place it in a tray with the edges turned up, as in the case of the preliminary coating, and pour nitrate of silver solution upon it; allow this to remain for about two minutes; pour off the remaining solution, returning it to the stock bottle or graduate for future use. Lift the canvas from the tray and suspend it to dry in the same position as that adopted in the first instance;

this will permit even sensitizing.
As soon as the canvas has become dry it is ready for printing. If the negative is a half plate, be sure and use a larger printing frame, so that the canvas does not become crumpled, which would be sure to cause a defective print. Place it in a 6½ by 8½ printing frame, or an 8 by 10, with a stout piece of glass in front to rest the negative upon and to resist the pressure; by adopting this means a perfect print will result. Print down to about two shades deeper than required when finished; as soon as the printing is complete the canvas must be again placed in a tray with its sides again turned up, and the surface washed by several changes of clean cold water to get rid of the free nitrate of silver.

After this the print can be toned by pouring the toning solution upon the surface and allowing it to remain for a minute or two. The edges of the canvas being turned up, it forms a dish or tray in itself. The toning solution is made up

as follows:

Chloride of gold Warm water 20 oz. Common whiting or chalk . 60 gm.

The mixture should be shaken well, and, when cold, filtered; it is then ready for use. When the print is toned it must be washed by pouring water very gently upon the surface; never allow the water to strike the print with force, or the image will become injured. As soon as washed, fix the image in a solution of

Hyposulphite of soda . . . 16 oz.

Fixing will be complete in ten minutes, after which the print may be well washed and dried, then mounted upon a stretcher in the usual way for painters' canvas. In some cases—for instance when the portrait or view is to be completely covered with oil color—it will not be necessary to tone the print; simply fix it in the hyposulphite of soda solution.

Wash the print well; then flood it with a weak solution of common alum—half an ounce of alum in ten ounces of hot water—and use the solution when it has become quite cold. This will change the color of the print slightly, but otherwise will

not affect the picture for painting upon.

Landscapes and marine views can be produced upon painters' canvas in this manner, which forms an excellent base for oil painting. The method here described is intended for printing-out only; the prepared surface is not sufficiently sensitive for enlargements, except in a solar camera, and then it would absorb too much time and trouble, because it would depend upon printing right out to full depth and would not admit of developing.

The reason why a gold toning bath is used that has been neutralized with chalk, is to avoid any alkali coming into contact with the oily portion of the paint; this would form a kind of

soap and cause the film to become loose.

To prevent any tendency of loosening the film, a very small quantity of common salt may be added to the toning solution, about twenty grains; not more than this quantity, because it must be remembered that common salt is a fixing agent—a mild one, 'tis true, but nevertheless it is a fixing agent and may stop toning altogether.

Storing Sensitive Papers

WITH the advent of dull, damp weather we would impress upon our business friends the importance of providing for the proper storage of sensitive papers. Bromide and gaslight papers possess astonishing keeping properties if certain

precautions are observed.

The careful stock-keeper who uses shelves and cupboards for the storage of sensitive papers should arrange for the papers to be placed on the lower shelves as near the floor as possible. It is asking for trouble to place them on a top shelf in a room lit by gas or warmed by a coke stove. The golden rule to observe is to keep all sensitive papers well away from the products of combus-

tion, and in a cool, dry place.

Dampness will also cause sensitive papers to deteriorate rapidly, and in the case of bromide and gaslight papers the emulsion may become locally desentized. In some workrooms a practice is made of exposing bromide prints and delaying development for a day or two, but this is a method which we do not recommend. We made some experiments in this direction, and found that bromide prints exposed one day and developed a few days later did not give anything like such good results as usual, especially those that had previously been stored in a damp place. The latent image appears to lose a large amount of the depth impressed upon it by light-action. With exposed plates and films this is not so apparent, excepting in the case of damp storage. "Stale paper" is often the verdict given on

"Stale paper" is often the verdict given on paper that shows the characteristic discoloration of the edges, whereas the real reason is invariably

"bad storage."

Sensitized plates and papers should never be stored in a room where sulphide or hypo-alum toning is done, or, in fact, anywhere near where sulphide fumes are likely to be present.—Rajar Trade Notes.

Sensitizing Canvas

The best method of making photographic prints on canvas (and it is really the only one known that fulfils the artist's requirements) is one practised as a secret process for many years by Mr. A. Brothers, of Manchester, and published by him in his Manual of Photography in 1889. The method is as follows: The canvas is wiped free from dust with a soft cloth or a damp wash-leather; it is then coated with—

Calcium chloride 60 gr. Methylated spirits of wine . . 5 oz.

This is rubbed well into the canvas, using a pad of swansdown, continuing the rubbing until all tendency on the part of the surface to reject the solution is quite overcome and the surface is moistened quite evenly all over. Finish the drying in front of a fire or, indeed, close to any heat-source.

When dry rub over with another pad or swans-

down dipped in:

When evenly coated, dry, then print under the negatives, using daylight, arc light, mercury-vapor or half-watt. The exposure is fairly rapid, say, for a thin M.Q. developed negative in good daylight ten to fifteen minutes, direct sunlight five minutes, three feet away from an open arc five minutes, 1000 c.p. half-watt three feet away fifteen minutes. One deep tint on a Johnson's actinometer may also be taken as a guide for a thin negative.

When exposure is complete wash for a minute or two in running water, drain, and flood with:

Ammonia 1 oz. Water 5 oz.

Apply for three or four minutes, then wash

again and hang up to dry.

Perhaps to many the great drawbacks to such a process is the fact that an enlarged negative is necessary, but if the Kodak Transferotype paper be used an enlarged negative can be made quickly and cheaply.

My plan was this: For a canvas 24 x 20 I had a board 18 x 15 and $\frac{3}{4}$ inch thick. On this was fixed with thick glue a sheet of thick felt, edges cut flush with edges of board. This board was laid under the canvas and fitted well inside the stretcher (corner wedges being removed).

From the small negative make a transparency by contact if half-plate or less; if larger, in the camera. This transparency is placed in the enlarger and an enlargement made upon Kodak Transferotype paper the size required. This is

developed, fixed, and washed, as directed in the sheet of instructions given with each packet of

After the enlargement is washed it is transferred to a sheet of plate glass (in my case 21 x 17) and when dry this is used as the negative for printing the image on the canvas prepared as above stated.

This method of printing an image upon canvas is the only perfect method known. The coating on the canvas is itself sensitized, and that without disturbance or alteration, also without any film being superposed to interfere with the

artist's brushes or paints.

The method of making a sufficiently good negative on Transferotype paper is simple, certain, and easy so long as the transfer to the glass is done without a preliminary drying of the enlargement. Drying always introducing an element of uncertainty as to whether the backing paper will stick tight or bring with it some of the image, but when this drying is omitted then there is never any trouble.

Once the print on the canvas has been made the negative may be scrubbed off and the plate-

glass used for another.—Old Photo.

Colors in Lantern Slides

Now that lantern slides are being made in considerable numbers by amateur photographers in all parts of the country, for exhibition and lecture purposes, the question of showing them in colors other than black and white frequently arises. There is no doubt that the interest in a series of slides shown on the screen is considerably increased by a variety of tones and colors in which they are shown, and a series judiciously chosen is a thing to be aimed at.

The worker, on the whole, is most wise who confines his toning efforts to monochrome results, and restricts his colors to those which are fairly neutral, such as warm black and brown. Bright blue, red, or green, for instance, should only be used sparingly, as there are very few subjects for which these colors are suitable.

Some of the best warm black and brown tones are secured on lantern slides by direct development; and even those makes of plates which are specially labelled "black tone" can be made to yield very pleasing warm black by employing a pyro developer instead of the usual metolhydroquinone or other black tone developer advocated.

A good formula for obtaining warm black

tones on these plates is as follows:

Α		
Pyro		1 oz.
Sodium sulphite crystal		4 oz.
Water to		20 oz.
В		
Ammonium carbonate		480 gr.
Potassium hydrate .		360 gr.
Ammonium bromide .		240 gr.
Water to	_	10 oz.

The plates should receive from four to five times the normal exposure for black tones, and the developer is made up by taking two drams each of A and B and two ounces of water. Development is complete in about three minutes. For richer brown and sepia tones by development chloride or gaslight plates should be used, and the developers recommended for obtaining warm tones, which are supplied with the plates, should

For toning black and white slides that are already made, however, there is a great variety of formulæ available; and one of the simplest for securing a rich chocolate tone is merely to bleach the black and white slide in any of the bleaching baths that are advocated for toning bromide prints or intensifying plates. This will convert the picture into what appears to be a grayish-white image when viewed by reflected light, and the tone is difficult to judge until the picture is projected on to the screen. But as soon as the transmitted light strikes through the image, the picture will be seen in a rich brown color. If the bleaching is thorough and the slide is well washed afterward, the result appears to be permanent. The image can, if appears to be permanent. The image can, in necessary, be redeveloped with the ordinary sulphide toning bath, which will, however, give a much redder color when the picture is seen on the screen than happens with a print on a paper

A pleasing reddish-brown tone is to be secured by first bleaching in one of the usual bleaching baths, of which the following is a good example:

	Potassium ferricyanide Potassium bromide						•	100 gr.
rotassii	ım	Dro	mic	ıe	•		•	100 gr.
Water								10 oz.

The slide is well washed and toned in-Sodium sulphantimoniate ½ oz. Water 10 oz.

The uranium nitrate toner also gives various shades of red and brown by direct toning action;

but its permanence is doubtful.

A fine blue-black color, suitable for certain subjects, can be secured by the application of an ordinary gold and sulphocyanide toning bath, similar to that used for P.O.P. This color is much more suitable for moonlight and snow scenes than the blue color produced with the iron toning

If the gold and sulphocyanide toning bath is applied to a slide that has been toned in the ordinary sulphide toning bath a bright red-chalk

color will be obtained.

Green tones are secured with the use of vanadium chloride; but it is a color that is very seldom required for any specific subject, and is best avoided. The vanadium toning bath recom-mended for green toning of bromide prints will be found to work perfectly well with lantern plates.

A variety of tone effects can also be secured on lantern slides by staining the entire slide with one of the many stains that are on the market for the purpose.—Amateur Photographer.

High Relief from Portrait Negatives

Hard gelatin .	100 gr.	200 gm.
Gum arabic	50 gr.	100 gm.
Water	1 oz.	1000 c.c.
Glac. acetic acid	5 min.	10 c.c.

SOAK the gelatin and the gum in the water for some hours, and occasionally stir, then add the acid, and heat in a water-bath until melted. This will keep, but before use it must be heated and poured on to a sheet of glass to the depth of about one-eight of an inch. When set it canbe dried, or sensitized at once with—

Potas. bio	hro	m.		₹ oz.	128 gm.
Liq. amm	o. 0	.880)	1 dram	21 c.c.
Water				1 oz.	1000 c.c.

Then dry, and expose under the negative until strongly printed out, then soak for some hours in—

Alum	10 gr.	20 gm.
Glac. acetic acid	10 min.	20 c.c.
Water	1 oz.	1000 c.c.

or until all the yellow color has disappeared. A high relief should thus be obtained, and a cast may be taken in plaster of Paris. When this has set hard it can be stripped, and if a print is taken from the negative, it may be possible to work it while damp over the cast, the latter being painted with thin glue.

Practical Washing

Physically, a solution of hypo always descends to the bottom of any receptacle containing water. You may demonstrate this by coloring it; therefore, in the case of prints or plates, why allow running water or any motion to be imparted to them when we have such a simple law practically doing the work for us?

It is a fallacy to test the water in a washer for hypo. If the test shows hypo, then it is obvious that there is some to be got rid of, but if it does not show, is it the water or the prints that require to be tested? The prints, certainly; and yet in the majority of cases one is taken as proof of the other. To test the prints for hypo, arrange to have an extra print and cut in into four; they will all find a different place in the washer, and little pieces can be cut off from time to time and tried.

Green Tones

GREEN tones are obtained on bromide prints by immersing them in—

Vanadium chloride .			20 gr.
	•	•	6
Ferric chloride			10 gr.
Ferric oxalate			10 gr.
Potassium ferricyanide			20 gr.
Oxalic acid (sat. sol.) .			2½ oz.
Water	_		20 oz.

Dissolve the vanadium salt in hot hydrochloric acid and a little water. Add the ferric chloride and oxalate to the oxalic acid solution diluted with half the water, then add the ferricyanide dissolved in water, stirring well, and

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finally the vanadium. Tone until the prints turn blue, and then wash until they are green.

Rapid Stand Development

BOTH adurol and metolquinol have been, in our experience, most successful in producing good-quality negatives by rapid "vertical" development, and for the production of a number of negatives from plates that have been fairly well exposed on subjects with similar lighting, the former will be found hard to beat. The following is a recommended formula:

Sulphite of soda .				8 oz.					
Carbonate of potash				6 oz.					
Water				20 oz.					
When all are dissolved add—									
Adural				1 00					

For use, take one part of this solution and add twenty parts of water. Correctly exposed plates will fully develop in this in about ten minutes.

Developer or Fixation Stains

DEVELOPER or fixation stains on developing paper can be removed by gently rubbing the surface of the print with—

Thiocarbonate		٠.	5 gr.
Nitric acid .			5 min
Wood alcohol			½ oz.
Water			å oz.

Plunge the print under water after each rubbing.

Carbon Prints on Japanese Paper and Vellum

The peculiar transparency of Japanese paper and vellum, and the value of the same, are never more strikingly shown than when used for the final support for carbon prints. It is true they are a little troublesome to work, but with care exquisite results can be obtained. The first thing to do is to clip the sheet of paper or vellum down so that it will not shift, and then work into the pores a collodion composed of—

Pyroxylin Methylated ether					71 gr.
Methylated ether	٠	٠	٠	•	⅓ OZ.

This should be applied with a camel's-hair brush and worked into the surface, and no less than three coats given, allowing each to dry in between. The carbon print is transferred on to the surface thus prepared, and possesses a transparency which gives a richness and depth in the shadows attainable by no other means except by using a transparency in contact with paper.

Practical Studio Helps

In every workingman's experience—no matter what his vocation—there are times when necessity, the reputed mother of invention, will push him up against problems the solution of which would never have entered his mind without that compulsory condition. The inventor, discoverer, or perpetrator of such compulsory methods or

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devices may sometimes fondly flatter himself that he is offering something entirely new when the same thing may really be as old as the proverbial hills to others; and, since such a contingency may naturally be expected, I shall not take the trouble to file any priority claims for any of the appliances or methods described here, or which I may give later on. I can only say that if such articles prove acceptable to the reader and Editor I will gladly furnish more from the same warehouse.

One thing seems to me certain: That to the hardworking "bread and butter" photographer such articles are frequently of more immediate interest and actual value than the overworked and workedover dissertations on the old theme as to whether photography is a fine art, a business, or a what-you-may-call-it. Inasmuch as all these methods have been tried out by the writer and others and found "not wanting," I am safe in the assertion that they are thoroughly practical, and that this article is not simply written against space.

Combined Lens Shield and Focussing Hood for Portrait Cameras

Materials required: Two straight pieces of heavy wire and four small screw-eyes; total cost,

about five or ten cents.

Procure two pieces of wire, $\frac{8}{10}$ inch in thickness and approximately thirty-six inches long, for an 8 x 10 camera. The screw-eyes should be just large enough to admit the wires without binding or having too much play. Two of the screw-eyes are inserted in top near outer edge of the front portion of the camera, the other two in top of the rear portion. See to it that the two sets of eyes run parallel and that they are equidistant. Inserting the two wires and throwing the focussing cloth over the wires and camera completes the entire job.

You will find that the movable portion of your camera will not affect the wires or focussing cloth in moving the bed in or out. The wires are held in position simply by the slight weight of the cloth. The forward ends of the wires should be bent into an eye or ring to prevent the cloth from catching on the sharp edges. Since you will very likely never have a desire to remove the screw-eyes after you have once tried this contrivance, the insertion of these very small eyes cannot possibly be regarded as objectionable. A little beeswax will fill these tiny holes

and never leave a mark.

As can be seen from this description, a hood of this kind will extend all the way from flush with the camera to eighteen and twenty-four inches beyond the lens, and will therefore shade it under the most adverse conditions. In addition to this, in case you happen to be making vignettes in the camera, the raising of one or the other corner of the cloth or the pulling out or pushing back of the hood will give you perfect control of the light on your vignetter. The lens shield is instantly converted into a focussing hood by simply pulling both wires and focussing cloth backward, thus forming a hood or canopy over your focussing screen, enabling you to do your work in comfort, keep your hair tidy, and

incidentally save you some unprintable words on a sweltering-hot summer's day.

An Excellent Focussing Aid for Portrait and View Cameras

The following method will vastly increase the sensitiveness of your focussing screen, and is especially valuable in focussing groups, large heads, copying, working under poor light conditions, or where focussing has to be done quickly yet accurately: in fact it will prove valuable at

any time and anywhere.

First see that your focussing screen is clean; then put a few drops of glycerin on a small wad of absorbent cotton, or the tip of your finger, and rub the glycerin evenly over the ground surface of the glass. This process, of course, makes your ground glass nearly as transparent as plain glass, and, since it could not be used in that condition, take next a wad of dry cotton, clean rag, or tissue paper and remove nearly all the glycerin, leaving only a very thin film or trace. Now try the glass in your camera; if you can still see the outline of the lens through the glass when focussing a few more rubs will soon set that matter right. Glycerin being inherently one of the slowest drying substances we know of, your ground glass will now be in prime condition for weeks and months.

Don't attempt to use oil in place of glycerin. Oil is a very undesirable substance for that particular purpose; it is uncleanly in itself, soon becomes rancid, dries out too quick, and in drying leaves a scummy film which is difficult to remove; while glycerin, in addition to its many other virtues, may be removed with a moist rag in a

few seconds.

A word of caution may not be amiss here: Since the image, as seen on a screen prepared as above, is so much brighter, more sparkling, and full of fine detail, it may possibly lead you to err on your exposure. It is self-evident that the screen has absolutely nothing to do with your actual light value, and that the exposures and lighting will therefore have to be the same as under former conditions.

While on this ground glass topic I happened to think of a little "wrinkle,"

How to Make a Temporary Ground Glass

This may come in handy when you happen to break your glass and have no immediate facilities for replacing it, i. e., if you lack time to make one by the well-known emery and water method, or when you even haven't any ground glass substitute in the house.

Insert a plain glass in your ground glass frame; then, with a small lump of common glazier's putty, dab the side toward the lens evenly until you have the opacity desired. This little dodge will enable you to "save the day" and nail your orders until you can make more permanent

repairs.

The Simplest and Most Practical Drying Rack

To studios which do a large amount of pastemounted work, the rack or racks described below, being designed on mechanical and common-sense



lines, will readily commend themselves. All racks I have seen so far, or have seen described and illustrated, seem to suffer from the same malady, i. e., they are entirely too cumbersome, too complicated, consume too much room, and their actual efficiency—or rather lack of it—is altogether out of proportion to their bulk. My racks were designed during the old albumen days, when practically all work was solid mounted and when space in the average finishing room was nearly always at a high premium. The fact that they have been extensively copied by those who have seen them in actual use in my studio seems to be proof of their real efficiency, and I simply give them here for the benefit of those who are still plodding along with cumbersome contraptions. The racks are nothing but boards of soft wood with grooves cut crosswise to receive the mounts.

Procure dressed boards of soft wood, pine or poplar, 5 inches wide, 11 inch thick, and any length best suited to your individual needs. Have your planing mill cut grooves crosswise of boards. The grooves to be about ½ inch apart, and ½ inch deep, and should be sufficiently wide to receive your heaviest mount. A board, or stick as we call them, 28 inches long will be found to be about the most convenient length, and will hold about 50 regular or heavy mounts, or double that number in thinner mounts, if prints are placed back to back and put in same groove. Since the grooves may be very quickly cut with a power circular or band saw, the cost of each stick should not exceed twenty-five cents. The stick should not exceed twenty-five cents. mounts, standing upright, are not liable to catch floating dust, and the spacing is sufficient to give good ventilation. You will note that each stick is self-contained, complete in itself, and it follows that you may order as many as your business may require. Five or six such sticks will give a capacity of from 250 to 500 mounts, yet they will occupy only a few inches of space when not in actual use, since they are then either piled on top of each other and left on the workbench or set aside in a corner. I think it will appeal to your mechanical instinct that in this construction there are no frames to build, no carpentering, no wires, nails, screw-eyes, shelves, cloth-stretchers, etc., and that they are practically indestructible, never needing any repairs or time-robbing tinkering.

Blocking-out

In order to get rid of surroundings which are incongruous or conflicting, it is customary in technical photography to have recourse to the operation known as "blocking-out." This consists of making the negative in those parts perfectly opaque, so that when it is printed they appear quite white. This result is obtained by painting or drawing on the negative with some suitable ink, which will not blot or run, will not crack on drying, and will be perfectly opaque.

There are a variety of inks which can be used for this purpose, some of them specially made for photography, such as Photopake, and other artist's materials of the ordinary kind. Of these Indian ink, liquid black and process black, may be named: but in the box of water-colors there

are many more which will serve when the specially prepared pigment is not available. We have seen a negative very effectively blocked-out with carmine, for instance; and a water-color which itself is not quite opaque can be made to give a perfectly non-actinic result by mixing with it a little red or yellow, or even by using red ink instead of water for mixing it up.

A camel-hair brush of the requisite degree of fineness is the tool which is generally used, and with a subject with irregular outlines it is indispensable. It is well to have at least two of different sizes: one for following any intricate details, and the other for broader work, and also for filling in after a fine line has been carried along the outline with the smaller brush. In some cases a mapping pen is handy, and in others, especially when dealing with mechanical work, the draughtsman's ruling pen will be a great time-

If the work is to be done properly it is necessary to have some kind of retouching desk or easel on which to support the negative. This may be extemporized from a sheet of plate glass, with a card laid on it having an opening to take the negative; or a board with such an opening can be used. What is needed is a support for the negative, extending far enough all round it to allow freedom for the hands, and blocking-out the light, except that which has passed through the negative. Underneath it must be a reflector for the light, and above it should be a screen of some kind to limit the light falling on the negative from above. Of course, a regular retouching desk such as is used by professionals is best of all, but, as has been shown, it is not indispensable; so that the amateur who has only to deal with a single negative now and again need not be at the expense of a retouching desk, although it will have its other uses.

The first step, having decided just what it is which is to be blocked-out, is to go all round the outline with the fine brush, taking great care on no account to encroach on the part that is not to be obliterated. If by chance this is done, a quick wipe with a moistened finger, toward the part to be blocked-out, will remove the pigment, and we can leave that part for a little while to dry, and go on with the rest, returning later on to the part we have left.

When the fine line is complete, the larger brush may be taken, and with it the line can be widened to an eighth of an inch or more. In doing this it is well to avoid the mistake of being too lavish with the pigment. A very little, on the image already existing in the film, will be sufficient to make it quite opaque; if too much is used, it will only give rise to trouble from the pigment cracking as it dries. When the boundary of the blockingout has been indicated in this way, the negative can be put aside for the blocking-out pigment to get quite dry.

It will occasionally happen that all the blocking-out which we require can be done with the pigment; but in most cases it is better to use it merely to make a border, not exceeding a quarter of an inch at the most, and to cover up the rest of the negative with opaque paper. The black paper used with roll film is very suitable. Black paper is sold by some of the leading dealers;

but the amateur who only requires a sheet now and again will find that he will have all he needs if he takes care of any which he may find used as packing with the sensitive materials he may buy.

The envelopes in which gaslight and bromide paper are packed do excellently.

To cut the opaque paper to size, a piece of tracing or tissue-paper may be put on the negative and the boundary of the blocking-out followed with a pencil, taking care that it is the outer and not the inner boundary, that is to say, that it is the line followed by the fine brush at starting. The tracing is then transferred to the opaque paper, and the outline cut out with a pair of scissors, cutting just slightly inside the line marked. The mask so made can be laid upon the film of the negative when printing; and may be kept from shifting by just touching it with gum in one or two places. Some workers put the paper mask on the outside of the negative instead of on the film side; but this does not seem to have any advantage; while there is always the risk, in that case, that light may leak round between the pigment and the edge of the paper, and cause a mark on the print.

When machinery and similar objects are to be

blocked out, a good deal of time can be saved by the use of the drawing pen. Straight lines may be followed with a ruler, and boxwood curves

can often be used in a similar way.

When such subjects as these are being photographed, and it is known that they are to be blocked out afterward, it is a good plan to cover up as much of their surroundings as possible with old newspapers or something similar of a light color and distinctive appearance. It is then much easier to recognize at a glance where the machine itself ends and where the background should begin, than it is when there are a lot of details included, which may be parts of similar machines, or at any rate such that it requires a knowledge of the thing photographed to make sure what is a part of it, and so to be left in, and what is to be excluded.

At the outset, work of this kind was referred to as being of use in technical photography, and it is well to recognize the limitation. The operation is seldom of much service in pictorial work, at any rate in the direct and rather crude form which it usually takes, and which has just been described. The plain white background which it gives has a very distinct advantage, when it is required to show some piece of machinery or other object without any of its incidental sur-roundings: but such isolation is itself a violation of pictorial principles, and is in fact a result which is the direct opposite of that at which the artist aims.

In pictorial photography then, if we get rid of the setting of our principal subject in the drastic manner which blocking-out provides, it can only be in order to put in some other setting; and this, on the blank given by blocking-out, is a very difficult operation. Not that it is difficult to print in detail from another negative in a fashion; but it is very difficult to do so in such a way that they harmonize perfectly with the blocked-out picture, so that the final result is convincing and is free from any suggestion of the way in which it has been reached.

There are two directions in which there is a great risk of incongruity between the two pictures which are thus combined. One is in tone values. The two negatives must be identical in the character of their gradation, and the second printing must be carried to exactly the right depth to harmonize with the first. The more keenly alive the photographer is to subtleties of tone, the more likely will he be able to realize the great difficulties which exist in getting one completely harmonious whole from two printings and two negatives in this way. The other is the

incongruity of definition.

This is very often seen in the work of the beginner, which in this way at once reveals the fact that it has been blocked-out. The definition in the original negative may not be perceptibly fuzzy; but it may be, in fact it usually is, a little less clear cut than the absolutely hard and distinct outline given by a patch of opaque paint on the film. It is to mask this that the advice has sometimes been given to do the blocking-out on the glass side of the negative. This may be effective, but calls for careful printing if it is not to show. Its success depends also to some extent upon the character of the outline to be blockedout.

There are refinements of blocking-out which are used by advanced workers, which aim at overcoming the difficulties which have been mentioned. These include the use of a positive transparency from one negative as a mask in making a positive transparency from the second, the two transparencies being then bound up in register and a fresh negative made from them. Space does not allow us to deal with these more elaborate operations at the present moment.-Photography.

Workshop Jobs

THE photographer whose lines are cash in a small town cannot afford to specialize in any one branch of work, but has to be prepared to undertake any commission which comes in his way. In London and most of the great centers there are specialists in photography as there are in medicine, engineering or architecture, and these keep pretty strictly to their own lines. The man who has attained a position as a delineator of society beauties does not seek a job to photograph the interior of a factory, while the technical man who is au fait in engineering and architectural work keeps equally aloof from making flattering por-traits. The "country mouse" has, however, to be a good all round photographer, for he cannot afford to decline jobs which may make all the difference between a bare struggle for existence and comparative comfort. This being so, he must pay great attention to what I may call the minor technics of his work, for on these his success in branches other than portraiture must mainly depend. To be a successful portraitist, a man must have natural genius, but for technical work the genius that arises from "an infinite capacity for taking pains" is the kind required.

Factory and workshop photography, comprising interiors and exteriors of buildings, as well as single machines and other constructions, is a class of work which every general practitioner is

called upon to do from time to time, and if the prints are to compare on equal terms with those made by specialists, a considerable amount of study as to the best apparatus and conditions required will be necessary. The photographer must also be able to point out to his clients in advance whether certain photographs can be attempted with any reasonable chance of success, but must not put difficulties in the way unnecessarily. I have always found customers of this class very reasonable to deal with, and ready to accept any suggestion which may lead to a successful issue, much heartburning being avoided by having a clear understanding before

starting on exposures. To give a clearer idea of what I mean, I will suppose that an engineer sends for me and says that he wants a series of views of his workshops taken. My first action would be to ask him to come round the building, and to point out what were the especial features of interest in each department, and the angle which it was desired to include. Also, I should at this stage arrange if possible for any touching up or preparation of such articles as would be improved by a little judicious "faking." This should, if possible, be arranged before the actual time fixed for the work, so that the photographer need not waste valuable time while these preliminaries are being attended to. The client will often be willing to remove benches or even small pieces of machinery if they would interfere with a good view of the shop as a whole. Windows may require blocking up, and sometimes the machinery itself may require a little treatment such as dulling bright parts, painting other parts a lighter color, and general tidying up.

Extremely wide-angled views should be avoided if possible, as the unnatural-looking perspective which results is often very unsatisfactory. Wheels which should be circular appear elliptical, while cylinders assume shapes which no engineer would tolerate. If, however, such views have to be made, care must be taken so to choose the point of view that these effects are reduced to a minimum. It must always be remembered that artistic effects of light and shade are not appreciated in commercial work if they exist at the expense of detail, and, therefore, one must be careful to give full exposures so that no large expanses of unfilled shadow are left in the negative. An exposure meter is a great help to the inexperienced, and as the standard tint takes rather too much time in most workshop "snapshot" dial by means of which a test can be made in a reasonable time. Many years ago a very experienced technical photographer, Mr. J. A. Harrison, who had himself been an engineer, devised a little camera on the photo-button model, using one inch squares of the same brand of plates which were to be used for the large negatives. The lens had an aperture of f/4, and the exposures were developed in the camera. This was a perfect exposure meter, but somewhat cumbrous as compared with the modern instruments.

The lenses should be carefully selected, and anastigmats will be found preferable not only on account of their superior marginal definition, but

because it is easier to arrange the view on the screen at, say, f/8 than it is at f/16, which is the maximum aperture of the older types of wide-The final focussing should be done angle lenses. with as small an aperture as convenient, and it is helpful to have a card or two printed in bold type which can be held in different places by an assistant, so as to be sure that everything is well in focus. A focussing eye-piece is generally desirable, and the focussing cloth should be ample in size, and quite opaque, so as to make the most of the feebly-lighted image. If it be found impossible to get sufficient depth, the definition at the farther end of the room should be sacrificed rather than that in the foreground, as this gives a much better effect in the print. As a rule, a rather high standpoint should be chosen, the lens being six or seven feet from the floor. This gives a better general view, and prevents one machine or article from blocking out another. It also allows of a larger aperture being used, as it necessitates the camera being tilted down to include the foreground; then, as the top of the camera back has to be swung outward to rectify the vertical lines, it helps to bring the fore-ground into focus, exactly the reverse effect of that obtained when pointing the lens upward, which necessitates the use of the smallest stops. The high position also minimizes the necessity for raising the front—a rather important advantage when using a wide-angle lens to the limit of its capacity.

As the exposures are necessarily long, it is advisable to use rapid plates, as it makes a considerable difference in a day's work, whether ten minutes or half-an-hour is needed for each exposure. In well-lighted shops it is often possible to get exposures short enough to include the workmen at their benches or lathes, the exposures being then anything from fifteen seconds to a minute. A flashlight fired at the end of such an exposure will often greatly improve a rather dark foreground without interfering with the general daylight effect. Plates should always be backed, and if there are any windows directly facing the camera they should, if possible, be covered up for part of the exposure. This can often be done from the outside by hoisting a sheet on a couple

of poles.

It may be thought that the foregoing instructions seem to tend rather in the direction of fussiness, but nothing that will help to secure a good result should be overlooked. It is the man who walks in and takes the place "just as it is" who runs the risk of having his work turned down. Circumstances may be favorable, and the job may turn out well without much trouble, but it is in difficult work that a reputation can be made, especially if another photographer has previously failed.

As a rule, the prints should be made on glossy paper, as not only does it show detail better, but the surface keeps cleaner. Personally, I still prefer P. O. P. for such work, toning to a good purple black. It is also easier to shade and take in printing, as the effect can be seen while printing is in progress. For reproduction glossy bromide is often required, and for some negatives is to be preferred, as softer prints can be obtained by giving full exposure and short development. This may give a bad color to look at, but one which will reproduce well. Despite a general impression to the contrary, hard or brilliant prints are not required for process work. The engraver can modify the contrast to a considerable extent, but he cannot supply black patches with detail.

A point which is often overlooked is that, as the size of a direct negative is increased, the difficulty of securing adequate depth of focus is increased in a greater proportion. This is easily realized if we consider what is done every day with the little fixed focus cameras with apertures of about f/12. The photographer who works a 15 x 12 camera will find that he hardly gets equal depth at f/64. I had recently to make a series of 15 x 12 prints showing men at work, some of them fairly close to the camera, and others far away; f/64 was impossible; therefore, I used a half-plate camera fitted with a 4-in. lens, and secured sharp negatives at f/22. When enlarged to 15 x 12, the general sharpness was far better than that which could have been obtained in any other way.—B. J.

The Carbro Printing Process

THE process of making carbon prints from bromides is not new, as it was invented fourteen years ago by Mr. Thomas Manly, and has been familiar as the Ozobrome process. The Carbro process, which is now described, as will be observed, follows on the general lines of Ozobrome, but differs from it in the fact of the tissue being prepared by treatment in one single bath; also ordinary carbon tissue is employed in the Carbro process, in which it has been possible to standardize the times of treatment for tissues of different color. Since the publication of an earlier article outlining the Carbro process, the writer has received so much encouragement from those who have given Carbro a trial that it was decided to continue experimenting in the hope of making the working so mechanical as to bring it within the reach of the most inexperienced worker. has now been accomplished, and altogether seventeen colors of autotype carbon tissue have been successfully adapted to the process.

Early experiments soon showed quite a variation in the time of immersion required for different colors, with dark blue at the short end (only three and one-quarter minutes), ranging to engraving black, with a lengthy immersion of ten minutes before detail was obtained in the highlights. It was found possible to work the whole of the thirty colors manufactured by the Autotype Co., in a single working bath, but the time of immersion of some of the colors was so unduly prolonged (as in the case of engraving black) that a second working bath was introduced for the purpose of reducing the time to something more convenient. With these two working baths the whole of the colors appeared to drop into two series, and the table given is probably the most convenient method that it will be possible to introduce.

A comparison between the two working baths will show that while the proportion of "B" and "C" differ, the quantities of "A" solution and water remain constant. This last point is most

important, and the worker is advised to adhere to the figures as closely as possible, obtaining control for pictorial results by varying the proportions of "B" and "C" solutions only.

Temperature, too, has a considerable influence on the chemicals used, and the ideal temperature for the working baths is between 55° and 65°. It may be pointed out here that 55° to 65° F. is the normal temperature of a living-room in England both winter and summer, and as the process requires no dark room the whole of the work may be carried out in cold weather beside the kitchen fire.

The keeping qualities of the stock solutions are excellent, and the working bath, until used, and thereby contaminated with organic matter from the carbon tissue, keeps for months. This is a useful point, as it permits the mixing of the working bath a day or two before required, and, by keeping it in a living-room, the mixed solution will take the temperature of that room and be ready for use at any time.

For the information of those who are unacquainted with the Carbro process, the first part of this article gives full working instructions, while the latter part will contain information which may prove useful should any difficulties

Briefly, a piece of commercial carbon tissue is "sensitized," and while wet brought into contact with a bromide print—this bromide acting as a "negative." These are allowed to remain in contact for about fifteen minutes, then separated, and the carbon tissue squeegeed to a piece of transfer paper. On this transfer paper the picture is developed, and the final result is a carbon print from the bromide. The picture is not, as in the single transfer of the carbon process, reversed from right to left.

The following are the stock articles required: a good bromide print; carbon tissue; single transfer paper; squeegee; squeegee board; dishes.

A flat squeegee is best, and a useful length for all prints up to 12 by 15 inches is 8 inches. The dishes should be procelain or enamel; papier-maché is too difficult to clean, and thorough cleanliness is essential. The drawing shows an easily made squeegee board which entirely prevents slipping.

It will be seen from the above that there is no great outlay for the initial work, and neither will the future require any additional expense

the future require any additional expense.

The sensitizing baths are made up from the following stock solutions:

A						
Bichromate of potash 45 gm.	400 gr.					
Bromide of potash . 20 gm.	175 gr.					
Ferricyanide of potash 20 gm.	175 gr.					
Water 1000 c.c.	20 oz.					
В						
Chrome alum 35 gm.	300 gr.					
Bisulphate of potash 5 gm.	45 gr.					
Water 1000 c.c.	20 oz.					
C						
Bisulphate of potash 5 gm.	45 gr.					
Water 1000 c.c.	20 oz.					

All the above appear to keep well if stored in a cool, dark place.

From the stock solutions make up the following sensitizing bath:

Sol. A					50 c.c.	1 3 oz.
Sol. B					9 c.c.	2 dr.
Sol. C					6 c.c.	100 min.
Water					200 c.c.	7 oz.
For conv	venie	ence	e. th	is n	nav be called	aa bath.

This is a most useful quantity for half-plate; for whole-plate use 50 per cent. more, keeping the same proportions all through, and for 10 by

12 double the quantities.

First place the bromide print in cold water and allow it to become thoroughly soaked; now take a piece of carbon tissue, cut about half an inch larger than the bromide from which the Carbro is to be made, and immerse face downward for a definite time, according to time and color table aa given at the end of this article. minute before the end of the time of immersion of the tissue remove the bromide print from the water and lay it face upward on the squeegee board. At the expiration of the exact time, withdraw the carbon tissue from the sensitizing bath, and, after allowing it to drain for a moment, lay it face downward on the bromide and squeegee into contact. Now mop off any superfluous moisture from the back of the tissue and cover with a piece of paper, or preferably water proof cloth. Place a book over this to prevent the tissue from curling, and thereby losing contact, and leave them in this position for from twelve to twenty minutes—the exact time is not a material point if kept within those limits.

A detail which requires emphasis is that from the moment of contact of tissue and bromide the sensitizing action begins; it therefore follows that once the two have touched there must be no attempt to adjust the carbon tissue if it has been laid down at the wrong angle, as such a course would inevitably result in a blurred or double image. Should any slipping occur, it is far better to squeegee and make the most of the resulting picture, as under no circumstance may

the tissue be moved.

Toward the end of the time of contact of bromide and tissue (twelve to twenty minutes) take a piece of transfer paper cut slightly larger than the carbon tissue, and soak this in cold water for about half a minute if of the thin variety, and about a minute for the thicker papers. Complete wetting is necessary, but oversoaking has a tendency to lead to frilling and

other troubles during development.

After wetting the piece of transfer paper, hold it up to drain for a moment, then lay it face upward on the squeegee board. Now take the carbon tissue and bromide, still in contact, and by raising one corner of the tissue steadily pull the two apart; leave the bromide for the present, place the earbon tissue face downward on the transfer paper, and squeegee the two into contact. Remove them from the board, place them between blotting paper with a book over them to prevent curling, and allow to remain there from twenty minutes to one hour (a couple of hours will do no harm). Go back to the bromide print, now bleached to a pale yellow, and place this in a dish of cold water for washing and redevelopment.

It is advisable to change the wash water during the first few minutes of washing, as the greater part of the sensitizing bath, transferred from the carbon tissue to the bromide, washes out very quickly. Obviously, this water soon becomes a solution sufficiently strong to have some material effect on the bromide print. After changing the water the print may be ignored until the process is finished.

The development of a Carbro print is a far simpler matter than the development of bromides, no chemicals being required. After sufficient time has been allowed for the pigment of the tissue to adhere to the transfer paper, tissue and transfer paper are placed in a dish of warm water. Start with a temperature of about 95° F., the hand being sufficient guide. Keep the two papers still adhering, well covered by the warm water, and wait until the pigment commences to ooze round the edges of the carbon tissue. This usually takes a minute or two, and if at the end of that time the oozing is not very apparent, a little more hot water may be added, great care being taken that the temperature is evenly distributed. As soon as the oozing shows all around the edges, carefully lift one corner of the carbon tissue, and, keeping the transfer paper as much as possible under water, steadily strip the two apart. The transfer paper will now be seen to be covered with a thick coat of pigment, a smaller quantity remaining on the carbon backing. This piece of backing has now completed its work and may be thrown away.

Turn the transfer face downward in the water and proceed with the development by holding one edge and gently moving the print over the surface of the water, great care being taken not to touch the bottom of the dish. A better plan, if the dish is large enough, is to gently splash the face of the pigmented transfer paper, and as the picture begins to reveal itself the splashing may be local for reducing any particularly dense part at the desire of the worker.

Development is complete when it becomes obvious that no more pigment will wash away, and the picture is laid face downward in cold water to clear it from any loose pigment on its

surface.

It will now be noticed that where the carbon tissue has been in contact with the transfer paper the latter is marked with a bichromate stain, to remove which the print is placed in a bath consisting of a 3 per cent. solution of alum, and allowed to remain until the stain has disappeared. This may be done immediately following development, or the print may be dried and alumned the following day. The alum bath may be used repeatedly until its failure to remove the stain shows that it is exhausted. Should the solution become very dirty it merely requires straining through a piece of old cotton or muslin.

This completes the process, and the bromide, after well washing (twenty minutes in several changes is all that is needed), may now be re-developed, well washed, and is ready for further Carbro prints, no fixing being required.

It is most important that the redevelopment of the bromide print be very thorough, and the prints are best left face downward in the developer for at least fifteen minutes. If this redevelopment is not complete it will be found that all succeeding Carbros will lack detail in the highlights, and once the high-lights have suffered from this insufficient redevelopment there appears to be no means of retaining them in Carbro,

except by slightly increasing the proportion of B solution in the sensitizing bath.

Both for the original development of the bromide and also for redevelopment, M.Q., Azol, and amidol all give excellent results, the writer's preference being for the last mentioned. For redevelopment (which, by the way, requires no dark room and no fixing) it is better to omit bromide of potash from the developer.

Some Useful Notes

In making first attempts with the Carbro process the worker is advised to try a preliminary test, using 3 c.c. (100 minims) less of C solution than the given formula, and, with two similar small bromide prints, give one piece of tissue an immersion of fifteen seconds less, and one an immersion of fifteen seconds more than the time given for the color which is being worked. The transfer paper may be marked on the back for future reference, with the formula used and the time of immersion (example: A.50, B.9, C.3-44 min.). This would form a permanent guide for future reference, and give the worker a clear idea of the effect of varying the time.

It is interesting to note here that the time of immersion may be well compared with the time of exposure of a bromide print—underimmersion (exposure) gives increased contrast, overimmersion (exposure) gives general flatness with high-lights veiled. Overimmersion may be remedied by using hotter water for development; under-immersion has no remedy. If in doubt give the tissue fifteen seconds more immersion than the

standard time.

Excess of B solution produces a general clogging, with a heavy deposit of pigment; excess of C solution slows the action of the bath, and longer immersion is needed to obtain definition in the high-lights. At the same time it holds back the shadows and general flatness results. This last detail is very useful for a harsh bromide, as by the addition of about 3 c.c. (100 minims) of C any degree of softness may be obtained, but don't forget to prolong the immersion from half to one minute.

The treatment of the original bromide print is an important factor in the final results obtained, and correct exposure and development are very essential. Overexposure and underdevelopment of the original bromide print produce great flatness, and the richness of the shadows is entirely lost in the final Carbro print. A weak bromide gives a weak Carbro, and for a weak negative the enlargement is best made on gas-

light paper.

There are occasions when slight overexposure of the bromide may be turned to useful account, as in the case of bald-headed skies. Slight overexposure in bromide gives the appearance of fogging, but the deposit of pigment in the sky of a Carbro print gives a suggestion of color. Wherever there is reduced silver in the bromide there should be a deposit of pigment in the Carbro print.

The figures of the time and color table have been worked out for all the principal makes of bromide papers, platino matt being the most useful. Some makes which appeared to contain very little silver required quite a lengthy immersion, one paper taking eight and a half minutes for sepia. There is no doubt that any paper will give a good Carbro, but such a prolonged immersion as eight and one-half minutes might be very baffling for a beginner.

Gaslight papers, on the other hand, need only three-quarters of the time given for bromides (same proportion for all colors). Gaslight papers gives Carbro prints fully equal to those obtained by bromide, and is therefore a valuable asset

when dealing with a flat negative.

Although the tables are given as working at a temperature between 55° and 65° F., it is advisable to keep as near to 60° F. as possible. Successful work has been done at 78° F., but above 70° F. trouble develops on account of the softening of the tissue necessitating great care to prevent slipping when squeegeeing to the bromide. Also there is danger of crushing the high-lights when squeegeeing to the transfer paper. Below 55° F. the activity of the chemicals varies in different proportions, upsetting the balance of the working bath. Obviously, too low a temperature is best avoided; it is an easy matter to raise the temperature by putting the bottle of working bath in warm water before pouring into the dish.

A convenient method of working a number of Carbro prints is to take them in lots of four. Put in the first tissue, then immerse the other three at regular intervals of two and one-half minutes and by the time the last one is out the first will be ready for the transfer paper. Quarter-plate prints may be worked, if all of the same color with four prints on one piece of tissue. Lay them in a square on the squeegee board, with a space of about 1 of an inch between them, and cut the carbon tissue about 7½ by 9½; this gives a comfortable margin for squeegeeing. For all work it is best to cut the tissue about $\frac{2}{3}$ of an inch larger than the bromide to allow for error when

placing the two in contact. For economy and convenience in working an excellent plan is to classify the bromide prints according to the desired color, then, having mixed one working bath, continue with the colors belonging to that bath until the mixed solution is exhausted. It is worth noting that filtering after use will inreease the keeping qualities of the working bath, but the bath is very cheap and there is no need to use stale

solutions.

Carbro has many advantages over bromide printing: It is permanent pigment; and you know before you commence working what the final color will be. This cannot be said of bromide toning. It is simpler than bromide making, and you have a choice of seventeen colors, with about ten different surfaces of paper support. In cost, Carbro has a fractional advantage.

Beware of air bubbles on the tissue during immersion. This is best avoided by lightly pressing the paper to the bottom of the dish and stroking the back of the tissue during the first minute

Accurate measurement of all solutions is

imperative. One c.c. (15 minims) more or less of B or C solution might make a difference of half

a minute in the sensitizing bath.

Store all solutions in the dark—light has a very powerful action on bichromate, and also on ferricyanide. In the dark these two are fairly stable. Should the working bath suddenly give a very

harsh print it is an indication that it is exhausted. Oxalic acid may be substituted for bisulphate

of potash, but its keeping qualities are not good, especially in the mixed bath, and its use is not recommended. Bisulphate of potash can be obtained from Messrs. Chas. Cooper & Co., 194 Worth Street, New York, and must not be confused with the bisulphite salt.

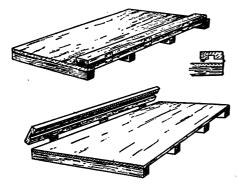
The process is suitable for transparencies, and prints on wood and silk, the method of preparing the support being the same as that given for the carbon process. For transparencies, give a rather longer immersion than for paper support, half a minute being sufficient for most of the

colors.

And just one "don't"-don't attempt modification of the working bath until you have be-come acquainted with the process. If you have any difficulty write to the Editor and ask him to pass the letter on.

Squeegee Board

The accompanying sketch shows a very useful type of squeegee board, designed to prevent slipping. It is inexpensive and easily made. The strips along the bottom should be about half or three-quarters of an inch in thickness, so that the fingers may be inserted under the board, while the thumb presses the hinged piece on the top. A pencil line should be marked the full length of the board, as a guide for laying down the bro-mide print; and three-eighths of an inch further back, another line as a guide for the tissue. The rubber strip runs the whole length of the hinged piece, and the best thing for the purpose is a piece of studded rubber, rather thin, such as is used for office stair matting. Failing that, a piece of square elastic about an eighth of an inch thick. The rubber can be fastened on with very small headed nails or tacks placed fairly close together.



The upper illustration shows the hinging of the clamping strip at the requisite height above the base. In the lower drawing is indicated the edging of studded rubber.

Time and Color Tables

The table for use, at a temperature of 55° to 65° F., and for working bath (aa), is: A, 50; B, 9; C, 6. Water, 200 c.c., i. e., A, 1\frac{3}{4} oz.; B, 2\frac{1}{2} dr.; C, 100 min. Water, 7 oz.

Color of carbon tissue.	Time of immersion in sensitizing bath.								
Dark blue			3½ minutes						
Terra cotta .			3½ "						
Standard brown			4 1 "						
Sepia			5½ "						
Sea green			3 <u>1</u> "						
Vandyck brown			5½ "						
Bottle green .			4 "						
Italian green .			41 "						

For contrast, omit "C" and shorten time by one half minute.

For working bath (bb): A, 50; B, 16; C, 16. Water, 200 c.c., i. e., A, 13 oz.; B, 5 dr.; C, 5 dr.; Water, 7 oz.

Color of carbon tissue		Time of immersion in sensitizing bath.							
Warm sepia					41	minutes			
Red chalk					$5\frac{1}{2}$	"			
Brown black					5 <u>1</u>	"			
Rembrandt sep	ia				4 🖥	"			
Cool brown me	zzo	tint	t		43	"			
Warm black					4 1/3	"			
Ivory black					5	"			
Engraving blac	k				6	"			
Gray Green					$4\frac{1}{2}$	"			

For contrast, 6 c.c. (100 min.) less of "C" and shorten time by one half minute.

All the above figures are suitable for Platino Matt bromide papers.—H. F. FARMER, in B. J.

Photographic Materials and Processes

Radioscopy; New fluorescent screens for -Roubertie and A. Nemirovsky. Comptes rend., 1919.

THE authors have prepared screens with cadmium tungstate as the basis in place of barium platinocyanide. Such screens are free from permanent phosphorescence, and are not affected by physical or atmospheric agents or by the pro-longed action of x-rays. Their luminescence, under the influence of x-rays, is white, the body being examined giving a black image on the screen. They are thus less tiring to the eyes of the operator, and the images formed may be photographed.

Development pictures and color-sensitiveness of different silver salts. F. Kropf, Phot. Korr., 56, 33—42. Chem. Zentr., 1919, 90, IV.

EMULSIONS of the various salts examined were prepared by adding to a solution of 100 gm. gelatin in 500 c.c. water a solution of a slight excess of the corresponding salt in 200 c.c. water and 50 gm. silver nitrate in 300 c.c. water. The color sensitiveness was examined either directly with the aid of a spectroscope, or, where the sensitiveness was only slight, by the aid of a Chapman-Jones exposure scale, the color patches of which were examined spectroscopically, Silver chloride is sensitive to all parts of the spectrum and more sensitive to the less refrangible rays

than silver bromide. Other salts examined were sulphite, cyanate, thiocyanate, ferrocyanide, bromate, iodate, periodate, phosphate, pyrophosphate, arsenite, arsenate, chromate, bichromate, citrate, and tartrate. All show sensitiveness chiefly to the shorter wave-lengths, with definite maxima in that region, e. g., sulphite 440 to 470 micra, thiocyanate 390 to 410 micra, with a second maximum at 440 to 480 micra. Although there is considerable variety in the spectral sensitiveness, no relation between this and the color of the salt was observed. Sensitizing with dyes gave no noteworthy results.

Sulphur-toning in solutions of polysulphides. L. P. Clerc. Bull. Soc. Franç. Phot., 1919, 6, 200—201.

DESALME'S method of toning with polysulphides (this Journal, 1913, 253) does not work equally well with all papers, some being apparently quite unaffected by the treatment. most of these cases there is, however, a certain amount of toning, the color of the sulphide formed being masked by the blackness of the remaining silver image, since a print which was submitted to the sulphiding bath with no apparent effect was found, on treatment with a bleaching solution of ferricyanide and thiosulphate, to leave a sepia-brown image. The action of the toning bath may be hastened by an increase of temperature up to 50° C., a preliminary hardening of the film being given by formaldehyde treatment, but the tone obtained is a brownpurple, more like that given by a hypo-alum bath than the usual sepia tone of the polysulphide bath. Continued treatment up to six hours' duration will also effect toning of some prints apparently unaffected by normal treat-ment. Transparencies behave similarly to papers, but some prints will withstand even prolonged hot treatment.

PATENT NEWS

Color photography. J. T. Smith, London, Eng. Pat. 129,717, 7.12.17. (Appl. 18, 141/17.)

A MULTI-COLOR screen for photographic purposes having very sharp lines of demarcation between adjacent colors, or with very little spreading of one color into another, is prepared by lining or stippling with an aqueous dye-solution containing a suitable colloid, preferably Le Page's fish-glue, on a very thin film, of non-water-absorbent substances, such as pyroxylin, on a glass support, and then staining

the unprotected parts of the base with a solution of dye, approximately complementary to the first color, in a non-aqueous solvent. Before first color, in a non-aqueous solvent. applying the second dye solution the colloid lines are preferably hardened by treatment with formaldehyde vapor or with bichromate and then thoroughly dried. The solvent used in the second staining solution depends on the dye used and on the solubility of the pyroxylin film, which should be only slightly softened on the surface. Aniline or similar weak organic base generally answers well, but its action may require modification by the addition of methyl alcohol, amyl acetate, acetone, or nitrobenzene, and in cases where the pyroxylin film is very tough it may be preferable to use nitrobenzene alone. A very short treatment (from three to thirty seconds) is given in this dye bath, followed immediately by blotting off the excess solution, a better result being obtained by repeating the treatment if necessary to get the desired depth of color than by pro-longed treatment. The film is then treated with a clearing bath, for example, a dilute acid solution following an aniline dye bath, to remove all traces of the second dye from the colloid lines. A protective coating of varnish or collodion is finally given before coating with a sensitive emulsion, or the screen film is transferred face down to another support, in which case the film base forms the protective coating. If a 3- or 4-color screen is desired, a third color is applied by lining or spraying, the dye and solvent being selected to combine with either or both of the first two colors according to the desired color scheme. The dyes recommended for use are p-rosaniline color-base or similar magenta color or acid-green for the first solution, and acidgreen or methyl-red for the second solution .-

Gelatinous compositions for use in the reproduction of line documents; Manufacture of —.
F. Dorel, Paris. Eng. Pat. 121,274, 2.9.18. (Appl. 4262/18.) Int. Conv., 7.12.17.

In the method of obtaining a printing block in which an undeveloped blue print is brought into contact with a film of gelatin containing a salt such as ferrous sulphate and mounted on a suitable base such as a sheet of zinc, copper, etc., a considerable increase in the visibility of the result, leading to easier control of the process, is obtained by incorporating with the gelatin film a white substance such as barium sulphate or lead carbonate. The white substance may be added as such or may be formed in the gelatin solution by double decomposition.

Photography; Methods and devices for discovering the time of exposure in—. U. Stefani, Tessin, Switzerland. Eng. Pat. 121,583, 29.7.18. (Appl. 12,316/18.)



BETWEEN OURSELVES

A Personal Calk by the Editor



WANT to thank the readers of the JOURNAL for the many kind expressions of **1** approval, and helpful encouragement and support they have given me, especially during these months when we have all been tried and tested to the utmost. It has been no easy task, with increased cost of production—paper, manufacturing details, etc., to spread a monthly feast acceptable to all—and to maintain the standard and give the sufficient number of illustrations to suggest and help the worker. But we have not stinted; our readers have been most indulgent, and now, as times gradually become normal, I can promise an increase in the many features that have of necessity been curtailed. It is easy for most of us to conceive the ideal photographic magazine. We all know there is a crying need for such a magazine—with plenty of high-class illustrations—plenty of original, right-to-the-point, practical, money-making, art-producing articles—articles by new writers who know; but alas! we editors have our problems and it is not so easy to give everybody, everything, every time!

But I want every subscriber of this JOURNAL to feel that this is his magazine a medium published for his benefit and helpfulness. His channel of expression and for expression. So do not hesitate to send in a suggestion—yes—a criticism, and let me know when we can be of any service to you. That's what THE PHOTOGRAPHIC JOURNAL OF AMERICA stands for.

During the year we shall have an important series on "Commercial Photography" -on "The Planning and Management of the Studio and Dark Room," on "The Value of Lenses," and many other practical features. The number of illustrations will be increased and will show the high-water mark of work of the profession, as well as what is being accomplished in pictorial photography. In a word, I want to assure you that you will gradually see a growth and improvement in the JOURNAL, and that the publishers will not only continue to maintain its high standard as an authoritative record of the latest and best in the photographic world, but will increase its usefulness.

The JOURNAL seeks the cooperation of progressive photographers everywhere. We want to help the practical, the earnest ambitious worker. Its pages will contain information and illustrations selected to this one end-to help make easy and certain the progress and success of all those who aspire to perfect photography.

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—F. A. Tennant in The Photo-Miniature

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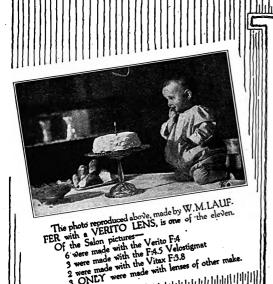
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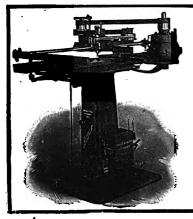


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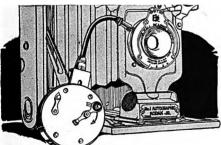
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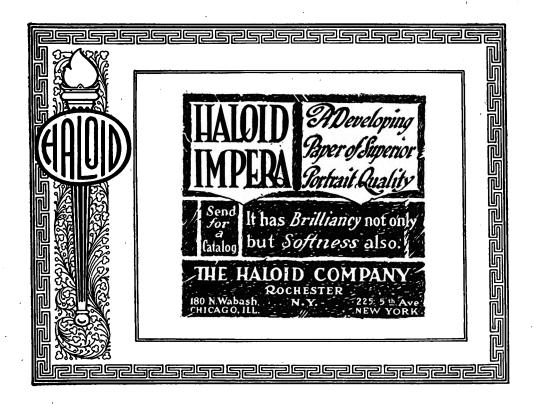
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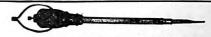
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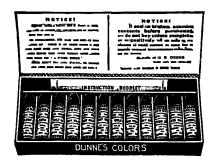
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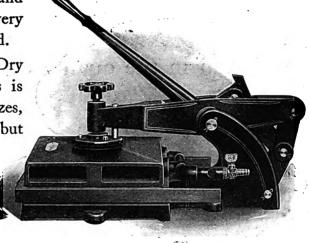
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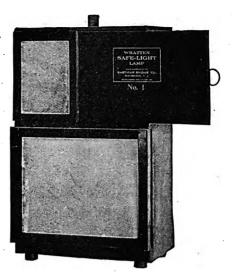
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